SUBSISTENCE STRATEGY AT A LATE ARCHAIC SITE IN SOUTH-CENTRAL KANSAS

by

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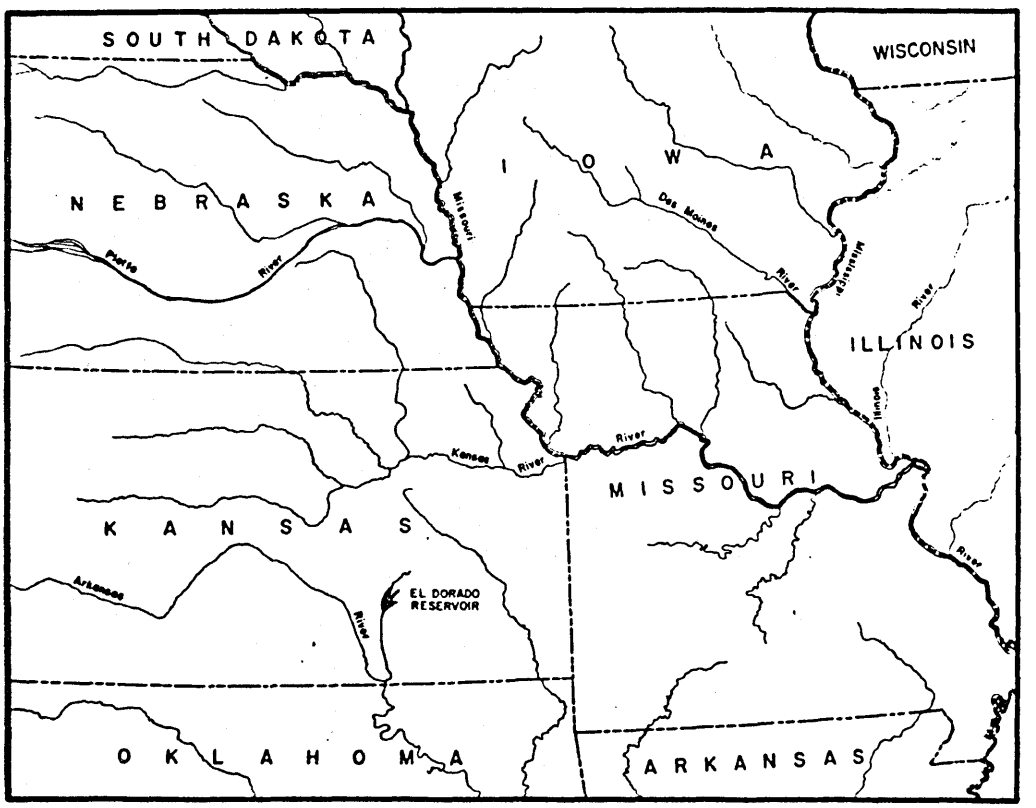
CHAPTER I

INTRODUCTION

The Faulconer site (14BU50) was recorded and excavated during the 1972 field season in the El Dorado reservoir area of south-central Kansas (Fig. 1) by a field party from the University of Kansas Museum of Anthropology. The site extends over an area of 480 $m.^2$ and consists of 8 buried occupation zones at the valley edge of a tributary of the Walnut River. Attributed to the Archaic, the upper occupation zones at the site date from the latter part of the second millenium B.C. The lower zones, excavated to a depth of 2 m. below ground level, have not been dated. Funding of the 1972 excavations was through a contract agreement with the National Park Service (Contract No. 2 920 P2 0054).

Few traits which characterize the 42 other reported archaeological sites within the reservoir area were encountered at the Faulconer site. The location of the site at the valley edge, the site fill including colluvial limestone fragments, and the relative abundance of shellfish among faunal remains, all represent departures from evidence encountered at other Archaic sites in the reservoir area. It is one of these characteristics, the faunal remains, which forms the central concern of this thesis. The faunal remains from the Faulconer site represent only a small number of species and not the total number present in the natural environment. For this reason, the exploited species represent selections, or subsistence strategy decisions, made by the site's occupants from

Fig. 1. Map Showing the Location of the El Dorado Reservoir Area.


SOUTH DAKOTA
WISCONSIN
NEBRASKA
IOWA
Missouri River
Des Moines River
Mississippi River
Platte River
ILLINOIS
Illinois River
Kansas River
MISSOURI
KANSAS
Arkansas River
EL DORADO RESERVOIR
OKLAHOMA
ARKANSAS

among available food resources. At 2 other excavated Archaic sites in the reservoir area, the faunal assemblages, and therefore, the subsistence strategies, differ from that defined for the Faulconer site. The faunal remains recovered from the Milbourn site (14BU25), and the Snyder site (14BU9), indicate a greater reliance on bison than was the case at the Faulconer site. In addition, the 2 other Archaic sites mentioned above lack evidence of intensive mussel utilization. To account for the similarities and differences in the faunal assemblages of the 3 Archaic sites, a subsistence strategy model will be developed for the interpretation of the remains from the Faulconer site. Subsequently, the remains from the other 2 sites will be included to test the model's applicability to other Archaic sites.

The first level of analysis of the subsistence strategy utilized by the inhabitants of the Faulconer site involves the discussion of two problem areas, 1) seasonality and 2) site selection. The second level of analysis includes a discussion of the results of these investigations as well as an attempt to integrate the results into the subsistence strategy model. The model will be introduced and discussed in the concluding chapter of this thesis. A brief description of the content of the two problem areas follows:

1. Seasonality: Basic to the discussion of subsistence systems of the Archaic is the understanding that the lifeway of Archaic peoples was not geared to a single ecosystem (Jenning 1969). The concept suggests seasonal variation of subsistence activities. Mayer-Oakes (1959) indicates that, east of the Rocky Mountains, the Archaic has been traditionally defined in two ways: as a stage of development and as a temporal unit. The concept of the Archaic as a developmental stage

connotes a hunting-fishing and gathering way of life and a social organization which reflects a semi-settled existence. Although a seasonal way of life has been proposed for the Archaic of eastern North America, little evidence has been presented to indicate that Archaic occupations in the Plains are seasonal in character. Faunal evidence from the Faulconer site, however, suggests a seasonal Archaic occupation. Since certain species exploited as food resources by the occupants of the site are available in greater abundance during specific times of the year, their remains in quantity at the site strongly suggest the season of occupation. The delineation of the season of occupation proceeds from the assumption that habitats and behavior of faunal species utilized as food resources at the site are similar to those of present-day members of those species.

2. Site Selection: The location of the site with reference to habitats of species exploited by the inhabitants will be discussed as will other possible reasons for site location which are not directly related to subsistence activities. To be discussed within this problem area is the interrelationship between the agencies responsible for conditions which favored species found as faunal remains at the Faulconer site and those agencies responsible for the deposition of the colluvial limestone fragments occurring in the site fill. Also within the scope of this problem is a discussion of the possibility of finding other sites in similar physiographic situations, sharing some of the characteristics of the Faulconer site.

No attempt is made in this report to fit the Faulconer site into a taxonomic scheme more specific than assigning the site an Archaic affiliation. Reasons for this are 1) the Archaic is little known in the

Plains and a cultural historical sequence has yet to be defined for the Archaic of south-central Kansas and 2) the Archaic subsistence pattern was probably geared to multiple ecosystems (Jennings 1969) resulting in a semi-settled existence (Mayer-Oakes 1959). In this view, components representing different seasonal occupations of the same human group would not readily fit into the same taxon, due to possible differing occupational modes with their separate technologies (Davis 1968). Seasonal occupations could be expected to have different artifact assemblages depending on the activities necessary to acquire and process resources having dissimilar characteristics.

The first part of this thesis is a descriptive archaeological site report, after which the discussion departs from the conventional report format. On the assumption that the faunal remains from the Faulconer site represent the residue of the employment of a subsistence strategy, a reconstruction of the strategy will be attempted. Presented in the concluding sections of this thesis, the reconstruction will include a subsistence strategy model and the discussion of the subsistence strategies employed at the Faulconer site and 2 other Archaic sites in the area.

Excavation and Recovery Methods

In order to collect data useful for developing a subsistence strategy model, attempts were made to collect and record as much of the cultural debris from the Faulconer site as was possible. Excavation of 7 of the 8 occupation zones was accomplished by means of hand tools. In addition, 27 soil samples were taken from the occupation zones to be water screened. Faunal remains, features, charcoal for C^{14} dating, flotation samples, profiles, artifacts, and geological features at the site were plotted horizontally and vertically to the nearest centimeter within the provenience system described below.

Arbitrary 2 $m.^2$ were chosen as excavation units and were established within a Cartesian coordinate system originating from an arbitrary datum point outside and south of the excavated area. The abcissa of the system was oriented northeast-southwest. The distances (x,y) from the datum point to the southern corner of each square was used to designate each excavation unit. For example, the south corner of square 21.00, 20.00 is located 21 m. northeast and 20 m. northwest of the origin of the coordinate system. Horizontal proveniences of archaeological remains were tied into the coordinate system by measuring from the southwest (x) and southeast (y) sides of the square to the plotted object and adding the measurements to the coordinates of the corner designations. All remains recorded in this manner were assigned temporary field numbers until permanent catalogue numbers were assigned in the field laboratory.

Vertical provenience was recorded with the aid of a transit. Each time the instrument was leveled or re-leveled, the height of the instrument crosshairs (HI) above the datum plane was calculated by placing a stadia on the 100.00 m. local elevation mark carved on an outcropping limestone boulder and adding 100 m. to the resulting reading. The 100 m. local elevation mark is 17.00, 24.50 within the horizontal coordinate system. Vertical plotting of excavated material was accomplished by placing the base of the stadia on the surface of the excavated object or feature to be recorded and noting the depth of the stadia (R) by means of the instrument. This reading (R) was then subtracted from the instrument height (HI) which gave the local elevation (E) of the measured object. The local elevations do not correspond directly to elevations above sea level, although the 100 m. local elevation at the site corresponds roughly to 1300 ft. above sea level. Due to the homogenous nature of the fill at the site, arbitrary 10 cm. levels were utilized for vertical control; each 10 cm. of local elevation corresponds to the division between arbitrary 10 cm. levels.

Since all cultural debris encountered at the Faulconer site was plotted to the nearest centimeter within the coordinate system described above, it was possible to reconstruct the horizontal and vertical positions of all recorded debris. This reconstruction allowed the definition of the 8 occupation zones used in the construction of the subsistence strategy model presented in the concluding chapter of this thesis.

CHAPTER II

BACKGROUND

Previous Archaeological Investigations

Previous archaeological investigations in the Walnut River Watershed have been reported by Mead (1905), Moorehead (1931), and Wedel (1959), who deal primarily with late prehistoric occupations in the area. More recent investigations in south-central Kansas include testing at the multi-component Bridwell site (14GR38) in Greenwood County (Johnson 1968) and excavations by the Kansas State Historical Society in the Council Grove and John Redmond reservoir areas and along the Upper Verdigris watershed (Witty 1963, 1969; Calabrese 1967).

Since the initial archaeological survey by the University of Kansas Museum of Anthropology in 1967 (Eoff and Johnson 1968), field crews from this institution have carried out annual summer investigations in the El Dorado reservoir area. Archaeological salvage projects in the reservoir area have been conducted under contracts with the National Park Service, with the exception of the 1971 excavations which were financed by the National Park Service and the Butler County Historical Society.

Twenty-seven sites were reported during the initial survey of the reservoir area in 1967. In the following 2 years, eight of the 27 reported sites were tested or excavated and an additional 15 sites were recorded. Between 1969 and 1971, excavations in the reservoir area were

concentrated at two deeply-buried Archaic sites, the Snyder site (14BU9) and the Milbourn site (14BU25). The Snyder site, perhaps the best studied Archaic site in the reservoir area, has components dating from the second millennium B.C. to the first century B.C. and is located 4 km. north of the Faulconer site on a terrace in the Walnut river floodplain (Grosser 1970). The Milbourn site is located 8.2 km. northeast of the Faulconer site in the floodplain and at the valley edge of a tributary of the Walnut River (Eoff and Johnson 1968).

During the 1972 field season, discussed herein, excavations were conducted at the Faulconer site (14BU50) near Bird Creek, a tributary of the Walnut River. The site is near the location of the dam of the proposed reservoir which places it among the first sites to be destroyed when construction activities are begun.

Environmental Setting

The El Dorado Reservoir, to be constructed 3 miles northeast of the town of El Dorado, Kansas, is located in the Flint Hills Upland division of the Osage Plains section of the Central Lowlands province of the Interior Plains (Schoewe 1949).

The Flint Hills Uplands of Kansas are a chert-bearing limestone outcrop, approximately 32 km. wide, that extends from north to south across the width of the state. About 25 kilometers east of the location of the proposed El Dorado reservoir area, at the eastern border of Butler County, lies the highly dissected eastern escarpment of the Flint Hills Uplands, some of the most rugged terrain in the state. Terrain within the reservoir area is characterized by a grassy, gently rolling surface, the result of differential erosion of westward dipping beds of alternating hard and soft strata. The more easily eroded beds are Permian shales, the more resistant beds are limestones of the same age. Streams in the Flint Hills Uplands of the Osage Plains cut deep channels which are often lined with limestone outcrops (Schoewe 1949).

Prior to European settlement, the bottomlands of the Osage Plains were timbered with stands of oak, black walnut, elm, locust, hickory, and other hardwoods. The uplands were dominated by grasses such as big bluestem. Mammalian fauna available to the aboriginal hunters of the area included bison, prairie dog, coyote, and jackrabbit in the uplands; deer, bear, fox, cottontail, and otter were available in the wooded stream valleys. Fish and shellfish were present in the streams. Among the avian fauna of the area were turkey, prairie chicken, ruffed

grouse, and quail (Wedel 1959).

Malin (1961:88) mentions that the division between deer and bison habitats was at the 97th meridian, some 12 kilometers west of the El Dorado reservoir area near the western limit of the Flint Hills Uplands. The overlap of the two species in the area near El Dorado in the first and second millennium B.C. is demonstrated by evidence from the Snyder site (14BU9) where both species appear as faunal remains (Grosser personal communication).

CHAPTER III

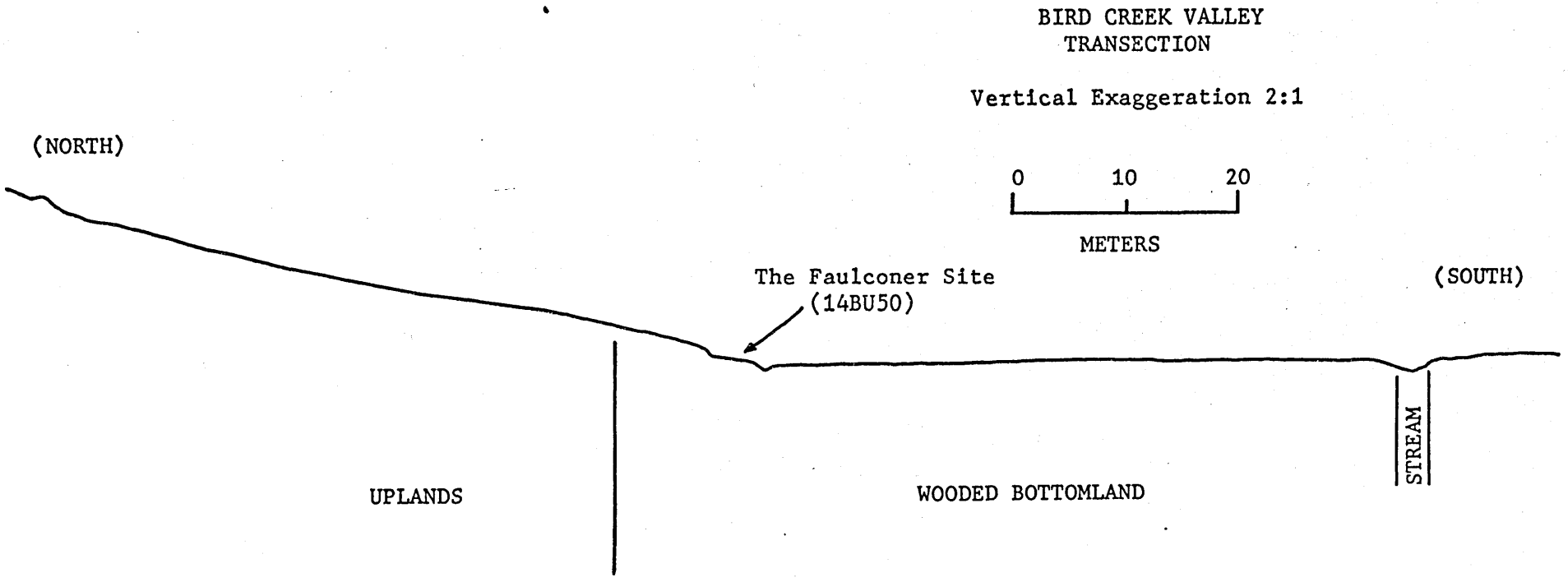
THE FAULCONER SITE

Terrain

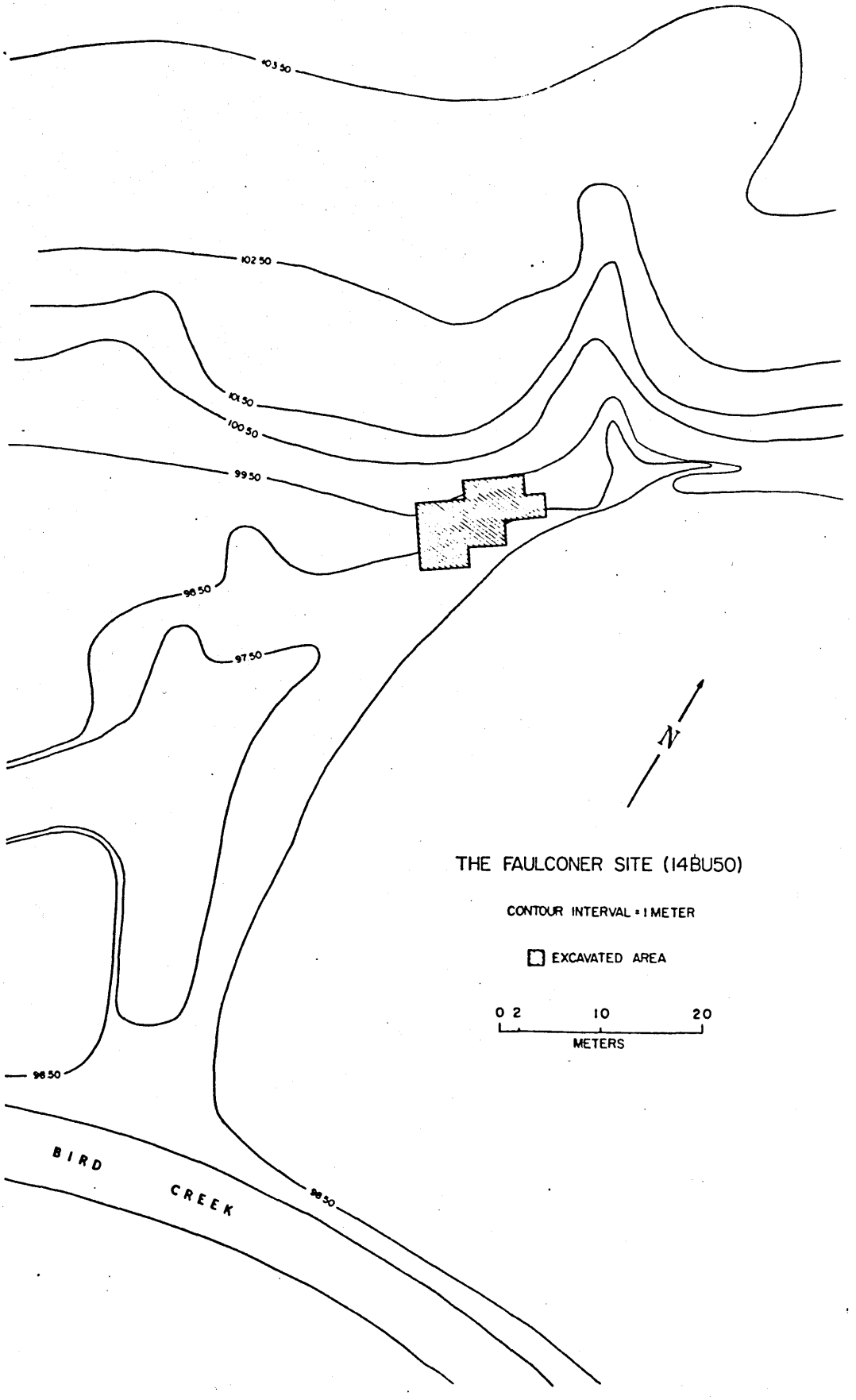
Bird Creek Valley, in which the Faulconer site is located, is generally aligned east-west. Valley width ranges from 15 m., 3 km. upstream from the site, to 400 m. at the junction of the creek with the Walnut River approximately 500 m. downstream from the site. The site is located in wooded bottomland at the northern edge of the Bird Creek Floodplain and is bordered on the northeast and west by woods and on the north by uplands. Intermittent limestone outcrops are evident immediately to the north and west. The upper levels of the site are .5 m. above the level of the floodplain to the south; a grass covered hill rising to a height of 20 m., lies to the north behind the site (Fig. 2). A steep limestone bluff 24 m. in height forms the side of the hill opposite the site. At the base of the bluff flows another tributary of the Walnut River, Bemis Creek. From the crest of the hill north of the Faulconer site, the uplands slope southeastward toward the floodplain at an angle of about 7 degrees to a limestone bench 10 to 12 m. above the floodplain. The bench appears intermittently on the ground surface along the wooded northern edge of Bird Creek Valley. It is in the area between the limestone bench and the floodplain that the Faulconer site is located.

A northeast-by-southwest trending wash, located between the bench and the floodplain, had exposed evidence of the buried site. At the

Fig. 2. Transection of the Bird Creek Valley Showing the Site Location, Topography, and Ecozones.


BIRD CREEK VALLEY
TRANSECTION
Vertical Exaggeration 2:1
(NORTH)
0
10
20
METERS
The Faulconer Site
(14BU50)
(SOUTH)
STREAM
UPLANDS
WOODED BOTTOMLAND

time of the survey, cultural debris was visible in the northwestern bank of the wash, but was lacking in the southeastern bank, leading to the assumption that the wash is presently located in the former southeastern limits of the site. The wash continues generally southwestward and divides before joining the Bird Creek channel at two points: 75 m. southwest of the site and 100 m. south of the site. The depth of the wash is 20 cm., 50 m. northeast of the site, 2 m. adjacent to the site, and 3 to 4 m. at both junctures of the wash with Bird Creek channel (Fig. 3). Another prehistoric site, 14BU12, is located in the floodplain between the Faulconer site and Bird Creek.


103.50
102.50
101.50
100.50
99.50
98.50
97.50
98.50
98.50
BIRD
CREEK
N
THE FAULCONER SITE (14BU50)
CONTOUR INTERVAL = 1 METER
EXCAVATED AREA
0 2 10 20
METERS

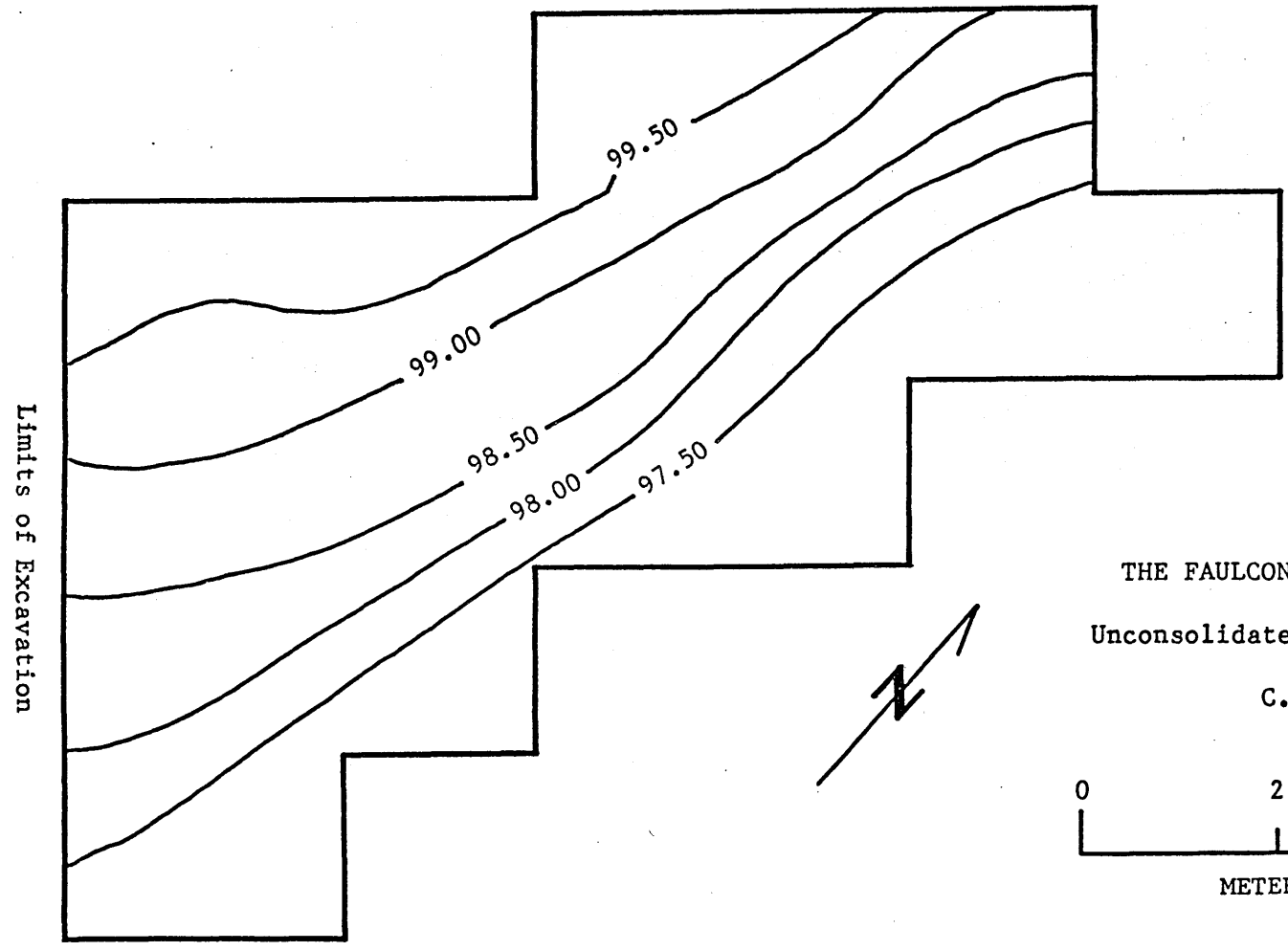
Stratigraphy at the Faulconer Site

A layer of alluvial overburden up to 1 m. in thickness and resembling the floodplain fill of Bird Creek, overlies the 8 occupation zones delineated at the Faulconer site. The zones, assigned alphabetical designations A through H, were defined on the basis of vertical clusterings of tools, features, and faunal remains. Six of the 8 zones contain concentrations of cultural debris with limited horizontal extent; two of the zones, C and G, represent "almost sterile" separations between the concentrations found in other zones and contain only scattered mussel remains and débitage. At the southern limits of excavation, the overburden is 1 m. in thickness and extends to the lower occupation zones; Zones A through D were not encountered in that part of the site. In the middle and northern excavation units, however, all 8 of the occupation zones were encountered, as were indications that additional occupation zones may be present below the lowest excavated zone, Zone H.

Fill of the occupation zones at the Faulconer site consisted of pebble-sized limestone fragments occurring in a matrix resembling in color and texture the overburden at the site (Fig. 5). The limestone fragments were encountered infrequently in Zone A, but appeared in greater quantity in the lower zones. Cementing of limestone fragments and of cultural debris by calcium carbonate in the lower zones further hampered excavations.

A southeast-sloping layer of limestones (Fig. 4), ranging up to 1 by 1 m. in size, was encountered immediately below the occupation zones

Fig. 4. Contour Map of the Unconsolidated Limestone Layer Beneath the Occupation Zones at the Faulconer Site.



THE FAULCONER SITE (14BU50)

Unconsolidated Limestone Layer

C.I.=50 cm.

0 2 4

METERS

TABLE I

Cultural Stratigraphy at the Faulconer Site (14BU50)

Zone	Local Elevation	Zone Thickness
Zone A	99.90-99.33	57 cm.
Zone B	99.33-99.02	31 cm.
Zone C	99.02-98.94	8 cm.
Zone D	98.94-98.80	14 cm.
Zone E	98.80-98.64	16 cm.
Zone F	98.64-98.40	24 cm.
Zone G	98.40-98.30	10 cm.
Zone H	98.30-98.00	30 cm.

in all but the northern excavation units. Each nearly horizontal occupation zone abuts the sloping limestone layer on the northwest and the wash or floodplain fill on the southeast, accounting for the north-south alignment of cultural debris within each zone at the site (Figs. 8-13).

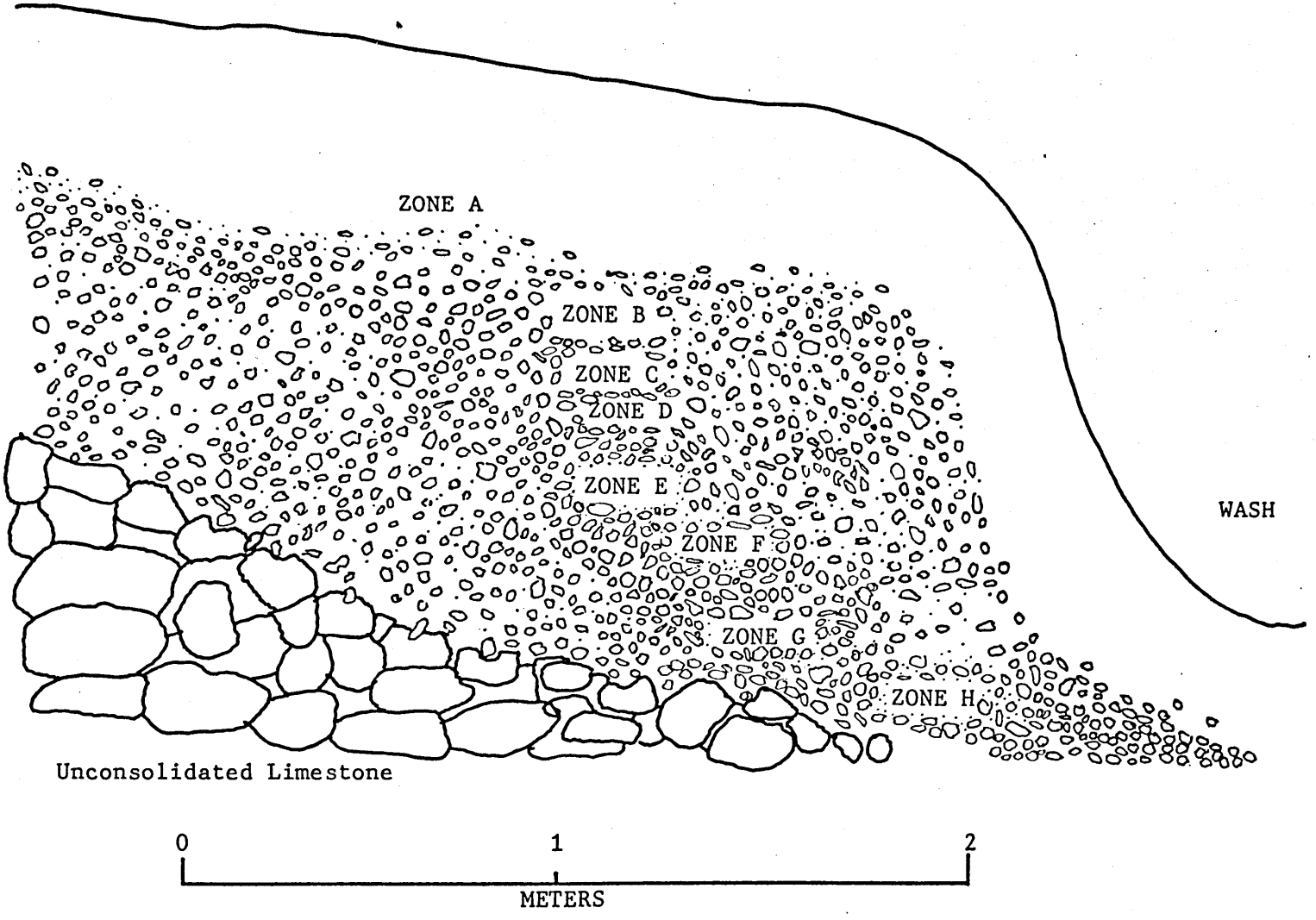
Although the contact between Zones A and B is evident as an abrupt change in the frequency of occurrence of limestone fragments, there is a lack of visible stratigraphy within and between the lower zones, suggesting that the deposition of the limestone fragments was continuous. Had deposition of the colluvium ceased, it is probable that such a weathered surface could be delineated; the boundary between Zones A and B could represent such a surface. Due to the intermixing of the limestone fragments and cultural debris, it is suggested that the colluvium accumulated at the site between and perhaps during occupations at the site.

Six of the 8 occupation zones excavated at the Faulconer site exhibit clusterings of tools and faunal remains in areas of limited horizontal extent (Figs. 8-13). These are interpreted as usage areas of the site, the character of which suggests occupations of rather brief duration. The Faulconer site probably consists of a series of usage areas scattered along the former valley edge. The two "almost sterile" zones, Zones C and G, may be adjacent to other, unexcavated usage areas, explaining the lack of cultural debris in quantity from these two zones in the excavated part of the site.

The estimated horizontal extent of the Faulconer site is an area 8 m. by 60 m., or 480 $m.^2$ Limestone fragments, similar to those encountered within the occupation zones, are evident in the banks of the wash up to 10 m. northeast of the excavations, and flakes have been noted

in the wash as far as 50 m. from the site in that direction. A total of 16 adjacent 2 $m.^2$ and four, 2 by 1 m. units, excavated to depths of up to 2 m. in 1972, are assumed to have been placed in the southern limits of the site. A 72 $m.^2$ section of the site was excavated at that time, representing about 1/6 of the estimated site area.

Fig. 5. Profile of the Northeast Limits of Excavations at the Faulconer Site.


ZONE A
ZONE B
ZONE C
ZONE D
ZONE E
ZONE F
ZONE G
ZONE H
WASH
Unconsolidated Limestone
0
1
2
METERS

Features

Four hearths and 2 postmolds were encountered in 4 of the 8 occupation zones at the Faulconer site. The uppermost of these, Feature 1, is a hearth composed of a rough circle of fire-reddened limestone fragments with associated charcoal. The feature was encountered 10 cm. above the contact between Zones A and B, and intruded that distance into Zone B. Immediately below the uppermost feature, another hearth, Feature 2, was encountered. Although the hearths are partially separated by fill lacking hearthstones, delineating the boundary between the two hearths was difficult. Feature 1 measures approximately 125 cm. in diameter; Feature 2, horizontally less well defined, occupies approximately three times the area of the upper feature. Both features are composed of stones averaging around 8 cm. in diameter. Thickness of the upper feature is from 15 to 20 cm., that of the lower feature is approximately the same as the upper. The thickness of each probably represents successive usages of the area for food preparation. Burned and unburned animal bones were encountered in the fill between the stones of Feature 2 and included prairie dog, fox, deer, coyote, and mussel remains. No faunal remains were recovered from the fill of the upper hearth. A date of 1150 B.C. $\pm$ 167 years (Rikagaku Kenkyosho N-1552) was obtained from a charcoal sample taken from between the stones of Feature 2.

Two other hearths, Features 3 and 4, while not nearly as large as the upper features, are composed of similar burned limestone fragments. Feature 3, an oval hearth encountered in Zone E, is composed of

a single layer of stones and measures 30 by 60 cm. Feature 4, a similar-sized hearth with an irregular outline, was encountered in the next lower zone and measures 40 cm. in maximum horizontal extent.

Two postmolds, encountered 3 m. south of Feature 3 in Zone E, are 7 cm. in diameter and 10 cm. in depth. The postmolds contained fill, darker than the surrounding matrix, which lacked the limestone fragments present in the latter. The two postmolds (Fig. 11) are 15 cm. apart, and suggest the presence of a structure at the site, as does a fired mud dauber's nest recovered from the area between the hearth and the post-molds in Zone E.

CHAPTER IV

ARTIFACTS

The Sample

Numerous definitions of the term "artifact" have been offered, such as: A "humanly made or modified phenomena"... "which are rather easily removed from the ground" (Klein 1969), "any material result of cultural activity" (Spaulding 1960), a "structure, tool, etc., modified in accordance with the norms of the culture" (Rouse 1972), a "portable object manufactured by man" (Chard 1969), or "any object modified by a set of humanly imposed attributes" (Clarke 1968). The discussion below will follow Spaulding's definition of an artifact as a "material result of cultural activity", qualified by Klein's phrase "which are rather easily removed from the ground".

With the exception of a worked antler tine, the excavated artifact assemblage from the Faulconer site consists entirely of chipped stone tools, preforms, blanks, and debitage. Grinding tools are lacking in the artifact assemblage suggesting that seeds were not intensively utilized at the site. This supposition is supported by the lack of charred seed remains in the residue of 27 water-screened flotation samples taken from the occupation zones at the site.

As reflected in the tools and debitage, the raw material used for most lithic manufacture at the site is a chert of local origin. The material ranges from tan to gray in color and often occurs with fossil

inclusions. Single lithic specimens exhibit the complete range of color variation of the raw material. Chert, similar to that found at the site, is present in beds of Permian limestone in the vicinity of the excavations; nodules of the material were encountered below the occupation zones in the layer of unconsolidated limestone and in limestone outcrops 75 m. west and approximately 250 m. upstream from the site.

Although the artifact assemblage from the site includes specimens representing the complete range of lithic manufacturing processes from nodule breakage and cortex removal to final retouch, no hammerstones were found. The only possible percutor from the site is the antler tine mentioned above.

Artifacts occurred in Zone A only as occasional finds, except in the northermost excavation units near the contact between Zones A and B in the vicinity of Feature 1. All other artifacts from the site, with the exception of a scraper fragment from 7 cm. below Zone H, were recovered from occupation Zones B through H. The scraper fragment from below the occupation zones suggests that additional zones may exist below those already delineated. No other evidence of cultural activity was encountered below Zone H, so the definition of additional occupation zones below Zone H is not warranted at this time.

Débitage

The 730 fragments of lithic debris from the Faulconer site were divided into 5 categories designated as chunks, trimming flakes, trimming blades, non-trimming flakes, and non-trimming blades. The categories, most of which were adapted from Clay (1970) are as follows:

1) Chunks: broken fragments of nodules, generally lacking well-defined striking platforms, greater than 1.5 cm. in thickness, with cortex.

2) Trimming Flakes: length is less than 2X width, with cortex.

3) Trimming Blades: length is greater than 2X width, with cortex.

4) Flakes: same as 2), lacking cortex.

5) Blades: same as 3), lacking cortex.

Flake and blade categories are further subdivided into 2 groups. Specimens greater than 2 cm. in length are designated as chippage, those less than that length are classified as small flakes and blades. No chunks were found less than 2 cm. in length. Chunks, chippage and small flake and blade categories are subdivided into heat treated and non-heat treated categories. Criteria for inclusion into the 2 subcategories are the presence or absence of discoloration. The color change is assumed to result from the application of heat to the cores before chunks, chips or flakes were detached. Experimental heat treating of chert from the El Dorado reservoir area was conducted by Grosser (1970). The results of the experiments indicate that the material is discolored at about 500° F. The discoloration, evident on 21.5% of all debitage from the Faulconer site, ranges from light to dark red. Evidence of heat

discoloration of specimens in the 5 major debitage categories suggests a limited role, or perhaps represents incidental heating, of nodules prior to initial breakage; only 5.3% of the chunks from the site show evidence of having been heated. In contrast, 42.7% of the specimens in trimming categories are heat discolored, indicating the importance of heat treating after nodule breakage. A less important, yet significant, role of heat treating during the final stages of lithic manufacture at the site is attested by the presence of 20% of the non-trimming flakes and blades which are heat discolored.

Most specimens included in the 5 major flake and blade categories represent waste material resulting from lithic manufacturing at the site, rather than intentionally produced blanks to be utilized for tool manufacture. Limited evidence from the site, in the form of 4 cores and 5 retouched flakes, does suggest, however, the limited production of flakes to be used as tool blanks. Four fragments of chert, resembling chunks, but lacking cortex, were recovered from Zones A, D, E, and H at the site. Each has been utilized as a core from which several flakes have been struck from a common platform. Two of the zones from which the specimens were recovered, Zones A and E, are zones in which single, marginally retouched flakes were encountered. Cores and marginally retouched flakes are not tabulated with the debitage in Table II, but are presented with tools in Tables III and IV.

The quantities of chunks represented in Table II are representative of the fragments of nodules from the site, but are not the actual number of specimens recovered. An estimated 200 lbs. of chunks were left at the site. The chunks from the site are assumed to have been discarded by the aboriginal flint workers because they contained either too little

chert, or contained chert of too low a quality for knapping. All other figures presented in Table II accurately indicate the number of specimens of each category recovered from the site.

Two types of lithic debris, flakes of bifacial retouch (Frison 1968) and multiple flakes and blades (Jelinek, et. al. 1971), crosscut the 5 categories of débitage from the Faulconer site. Multiple flakes are superimposed flakes struck from a single platform and are often detached simultaneously by either percussion or pressure. Flakes of bifacial retouch from the site have faceted overhanging platforms which represent the edge of bifacial tools from which they were removed presumably during sharpening of the artifact. Both categories are included in the débitage counts presented in Table II.

TABLE II

Distribution of Débitage from the Faulconer Site

Zone	Trimming Flakes		Trimming Blades		Chunks		Flakes		Blades		Totals
	⩾2 cm.	⩽2 cm.	⩾2 cm.	⩽2 cm.	⩾2 cm.	⩽2 cm.	⩾2 cm.	⩽2 cm.	⩾2 cm.	⩽2 cm.	
Zone A:											
heat treated	3						2	3	4		12
non-heat treated	14				7		21	19	2	1	64
Zone B:											
heat treated	12	1			1		11	18	2	1	46
non-heat treated	20	2			6		65	41	8	5	147
Zone C:											
heat treated	1						2		3		6
non-heat treated	3	1	3		2		25	15	2	2	53
Zone D:											
heat treated	7	1					8	5	2		23
non-heat treated	16				13		24	20	4	1	78
Zone E:											
heat treated	6						3	10			19
non-heat treated	14		2	2	11		33	22	2	3	89
Zone F:											
heat treated	9		1		2		16	5	3		36
non-heat treated	10		2		2		42	10	2		68
Zone G:											
heat treated							3				3
non-heat treated	3				3		13	5	1		25
Zone H:											
heat treated	2						6	5			13
non-heat treated	4				7		18	18		1	48

Marginally Retouched Tools

Flakes with continuous lines of retouch are not numerous in the assemblage from the Faulconer site. A total of 4 non-trimming chippage flakes and one trimming blade in the assemblage exhibit marginal retouch. Two retouched chippage flakes from Zones E and B are trapezoidal and rectangular in outline and have been retouched on their distal ends and on parts of their lateral margins. The edge angle, defined as the angle between the ventral and retouched dorsal surfaces (Wilmsen 1970), is 70° on each of the specimens. A trimming blade, recovered from Zone F, is also trapezoidal in outline with retouched lateral margins. The edge angle is 50°. The other two marginally retouched specimens, from Zone A and from 7 cm. below Zone H, are rounded fragments of the working edges of end scrapers. One specimen was formed on the distal end of a chippage flake, the other, on the opposite end of a similar flake. The edge angle is 45° in both cases.

TABLE III

Marginally Retouched Tools from the Faulconer Site (14BU50)

Blank	Length	Width	Thickness	Edge Angle	Edge	Radius	Zone
Blade	81 mm.	43 mm.	16 mm.	50°	straight	--	F
Flake	48 mm.	34 mm.	10 mm.	70°	straight-rounded	140 mm.	B
Flake (frag.)	31 mm.	16 mm.	4 mm.	45°	rounded	190 mm.	below H
Flake	29 mm.	26 mm.	3 mm.	70°	straight-rounded	304 mm.	E
Flake (frag.)	28 mm.	39 mm.	9 mm.	45°	rounded	100 mm.	A

Bifacial Tools

Five categories of bifacially chipped stone tools were recovered from excavations at the Faulconer site; bifacial blades, projectile points, scrapers, drills, and celts. The paucity of tools made on bifacial blanks should be emphasized; a total of 48 complete and fragmentary stone tools from the site have been grouped into the 5 categories. Conventional artifact categories are used to organize the following artifact descriptions more to facilitate communication than to denote actual tool functions. It is realized that tool functions may correspond to the assigned categories, though, since morphological criteria are used for inclusion of specimens into groups.

The following terms will be used to describe tool outlines: A triangular outline indicates that maximum width occurs at the proximal end, an ovate form indicates that maximum width occurs between the mid-section and the proximal end, and a lanceolate form indicates that maximum width occurs between the midsection and the distal end.

A. BIFACIAL BLADES: Specimens in this category have oval outlines with margins converging to rounded or pointed tips. Bases are straight or rounded and lateral margins are convex. Cross sections are lenticular, as a result of the removal of expanding flakes from the lateral and basal margins. Two subcategories, 1) blanks, preforms, and discards and 2) knives, were differentiated on the basis of edge configuration, gross size, and marginal retouch, within this category. The two subcategories probably represent successive stages of lithic manufacture, although it

TABLE IV

Distribution of Tools from the Faulconer Site (14BU50)

Zones	Marginally Retouched Tools	Bifacial Blades	Projectile Points	Scrapers	Drills	Celts	Cores
Zone A	1	2	1		1	1	1
Zone B	1	5	1		1	8	
Zone C							
Zone D		3	2				1
Zone E	1	4	2				1
Zone F	1	4	2	1		1	
Zone G							
Zone H		4					1
below H	1						
TOTALS	5	22	8	1	2	10	4

GRAND TOTAL 48 Tools and 4 cores represented by 52 specimens

is realized that specimens in all subcategories could have functioned as finished tools.

1) Blanks, Preforms, and Discards: The first subcategory includes specimens with sinuous edges, a result of the removal of alternating flakes during bifacial thinning. Little or no marginal retouch is evident. Sizes of specimens in this group (Fig. 7e,f,g) generally indicate that additional retouch could reduce the specimens to the size of finished tools from the occupation zones in which both were encountered. Other specimens in this subcategory exhibit numerous step fractures, resulting from repeated unsuccessful attempts to remove excessive thicknesses (Fig. 7b). Another, smaller specimen in the group (Fig. 7a) was apparantly broken during manufacture; halves of the specimen were recovered several meters apart. The specimen has a large striking platform on the lateral margin adjacent to the break. The presence of other specimens assumed to be broken during manufacture and specimens with excessive thicknesses due to unsuccessful bifacial thinning (Fig. 6j), suggest that this subgroup contains specimens which are "rejects" or "discards" as well as specimens which are blanks and preforms.

2) Knives: The second subcategory of bifacial blades from the Faulconer site is delineated on the basis of further modification of blanks and preforms in the form of finer flaking and marginal retouch which has resulted in a straightening of the marginal edge configuration. Flake scars of specimens in this subgroup, generally narrower and more nearly parallel, seldom continue from the margins to specimen midsections; the expanding scars resulting from the initial thinning of specimens have been partially oblitterated by the narrower scars (Fig. 7c). A tanged blade, similar to other specimens in this category is triangular in outline

with a shallow corner notch at the proximal lateral margin (Fig. 6f).

B. PROJECTILE POINTS: Projectile points are characterized by provisions for hafting, regularity of retouching scars, and distal ends which are more pointed than other categories. Cross sections of all specimens included in this group are lenticular. The following subcategories within the group have been defined on the basis of hafting preparations.

1) Side Notched: The single incomplete specimen in the subcategory (Fig. 6h) has a straight sided, triangular outline and a slightly convex base. Distance between the eliptical notches is approximately one-half base width.

2) Stemmed:

a. Contracting stemmed: Two specimens in this subgroup (Fig. 6a,e) are characterized by triangular blades with slightly convex margins and stem width which is greater at the distal end. Base margins are convex. Stem widths are approximately one-half maximum width.

b. Straight Stemmed: The single specimen in this subcategory (Fig. 6b) has a triangular blade with slightly convex margins and a round shoulder at the juncture of the blade and stem. The lateral edges of the stem are parallel and exhibit evidence of grinding which has blunted the edges. The base is concave and approximately three-quarters maximum width.

3) Lanceolate Form: The single specimen in this category (Fig. 6g) has convex sides and a convex base. Maximum width is approximately one-half maximum length.

C. SCRAPERS: The one specimen identified as a scraper made on a bifacial blank (Fig. 6i) has a continuous line of retouch forming an arc on the working edge. The specimen, recovered from Zone F at the site, is a

modified bifacial blade from which a flake has been removed to produce a plano convex cross section near the tip. The tip of the specimen was then further modified by steep retouch, at an angle of 45°, which formed a working edge with a rounded outline. Radius of the working edge is about 1 cm.

D. DRILLS: Two specimens with elongated bits of approximately equal width and thickness were identified as drills (Fig. 6c,d). The base of one specimen has a rounded outline, the other base is trapezoidal.

E. CELTS: The single complete specimen from the site (Fig. 7d) is trapezoidal in outline with a convex bit at the widest extremity. The butt of the tool is a flat surface. The bit bevel was formed by the alternate removal of flakes which produced a sinuous working edge. Cross section of the specimen is lenticular. Bit Fragments, some of which show evidence of battering in the form of small clustered step fractures, are also included in this category.

Fig. 6. Chipped Stone Artifacts from the Faulconer Site.

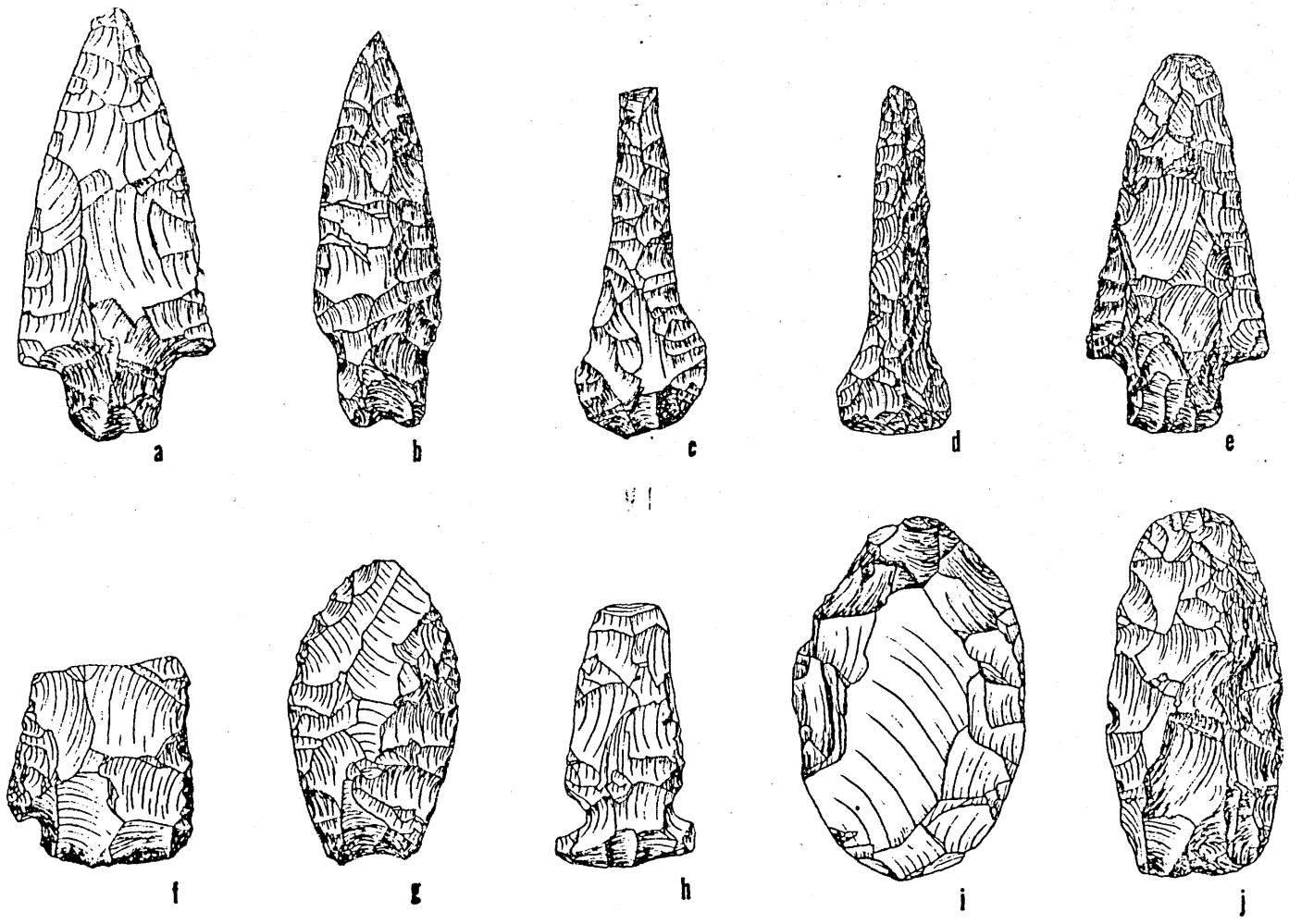
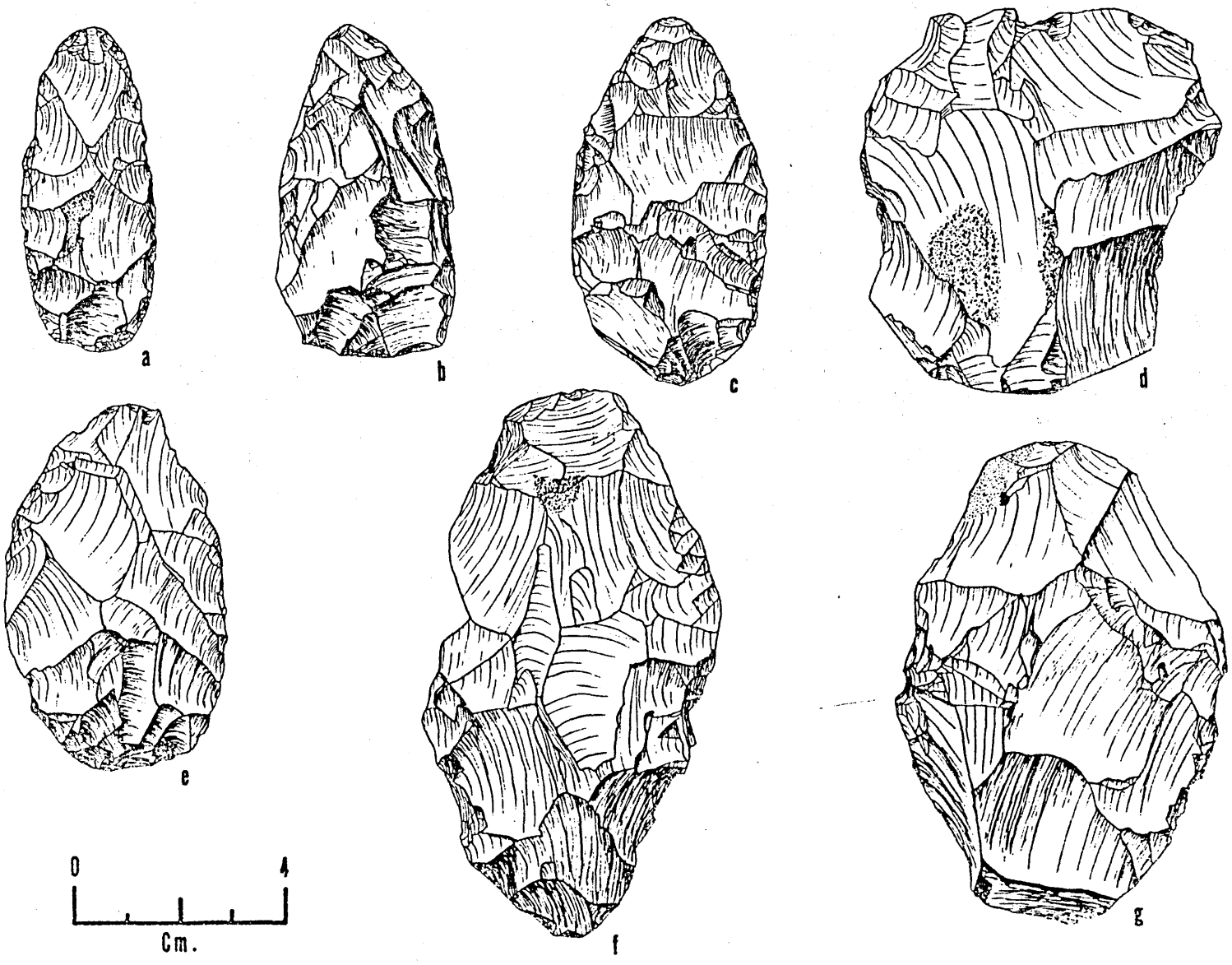

a
b
c
d
e
f
g
h
i
j
0
4
Cm.

Fig. 7. Chipped Stone Artifacts from the Faulconer Site.


a
b
c
d
e
f
g
0
4
Cm.

Bone Tools

An antler tine is the only non-lithic artifact recovered from excavations at the Faulconer site. The specimen, from Zone E, has a series of longitudinal striations near the distal end. The tip of the specimen has been flattened and exhibits wear patterns similar to patterns of wear on antler flakers used by modern flint knappers (Bruce Bradley, personal communication). The proximal end of the specimen has been socketed and has partially filled with calcium carbonate precipitate.

CHAPTER V

FAUNAL REMAINS

The Sample

The faunal assemblage recovered from excavations at the Faulconer site was obtained by the use of hand tools which were utilized to excavate the 8 occupation zones. Water screening of the 27 soil samples from the site produced numerous bone fragments, none of which was identifiable. As mentioned above, the Faulconer site is thought to consist of a series of usage areas, similar in content, which are scattered along the former valley edge, therefore, the faunal remains from the excavated part of the site probably represent the range of the faunal remains from the unexcavated portions of the site.

The mammalian species were identified with the aid of the comparative skeletal collections at the University of Kansas Museum of Natural History. Mussel remains were identified with the aid of Murray and Leonard's (1962) key to the identification of Kansas mussels. The minimum number of individuals of each non-mussel species within each zone was estimated "by counting the number of control elements of each species (determined through right or left humeri, femora, etc.)" (Olson 1971). The minimum number of mussels from each zone was estimated as the greater number of right or left valves of each species. Of the 314 bone fragments recovered from the 8 occupation zones at the site, 50

are identifiable to the species level (Table V). Many of the specimens are small, unidentifiable medial fragments, some of which probably represent parts of elements which were identifiable. Most elements recovered from the site were broken, presumably, in the case of larger specimens, to extract the marrow.

The identified faunal elements recovered from the Faulconer site consist of 48 specimens representing 7 species of mammals including coyote (Canis latrans), the Plains pocket gopher (Geomys bursarius), the black tailed prairie dog (Cynomys ludovicianus), jackrabbit (Lepus californicus), deer (Odocoileus sp.), cottontail (Sylvilagus floridanus), and the red fox (Vulpes fulva). The one avian faunal element from the site is a turkey (Melagaris gallopavo) femur. The turtle element from the site is an ornate box turtle (Terrapene ornata) carapace fragment. Although the faunal remains from the site includes most mammalian elements, limb bones and dentition predominate.

The majority of the mussel remains from the Faulconer site are tentatively assigned to the genus and species Crenondonta peruviana. Two other genera and species, Quadrula peruviana and Ligumia recta, are present in the mussel remains in limited numbers. A total of 195 identifiable valves was recovered from the site, and approximately one-eighth that many specimens were not recovered since they were too friable to allow recovery of identifiable parts.

The 181 Crenondonta p. valve fragments represent the remains of 103 individuals. The 14 other specimens present in the mussel remains represent 9 individuals of Quadrula p. and 4 individuals of Ligumia r. Crenondonta p. remains were recovered from Zones B through H while Quadrula p. remains were present in all Zones except A, C, and G.

TABLE V

Distribution of Faunal Remains from the Faulconer Site

Species	Zone A	Zone B	Zone D	Zone E	Zone F	Zone H	TOTALS
Canis latrans, coyote		1				1	2
Cynomys ludovicianus, prairie dog		3	1	1	1		6
Geomys bursarius, Plains pocket gopher		1		2			3
Lepus californicus, jackrabbit	1				1		2
Odocoileus sp., deer	1	1		1	1		4
Sylvilagus floridanus, cottontail				1			1
Vulpes fulva, red fox		1					1
Melagaris gallopavo, turkey		1					1
Terrapene ornata, ornate box turtle					1		1
TOTALS	2	8	1	5	4	1	21

Ligumia r. remains occurred in Zones B and D through F. Minimum numbers of individuals of each species are presented in Table VI.

The combined faunal remains from the Faulconer site represent 3 ecozones, 1) the stream, 2) the wooded bottomlands, 3) and the grassy uplands. Each of the 3 ecozones can presently be encountered within a 100 m. radius of the site location which is in the wooded bottomlands approximately 75-100 m. from each of the other two ecozones. Living forms of 4 of the species recovered as faunal remains from the Faulconer site are upland dwellers and include coyote, pocket gopher, jackrabbit, and prairie dogs.

Prairie dog (Cynomys ludovicianus) remains, encountered in Zones B, D, and E, suggest that the animals were present in the area near the site during the time of the accumulation of at least part of the 190 cm. of occupational debris and colluvium at the site. The remains represent 6 individuals, 3 from Zone B and a single individual each from Zones D, E, and F. The gregarious and herbivorous nature of the species suggests the existence of at least a small colony of the animals in the uplands near the site. Necessary for the establishment of a prairie dog colony is a disturbed grassland environment. One mechanism responsible for providing conditions favorable for the establishment and maintence of prairie dog communities is large herbivores, such as bison, which often overgraze a favored area despite the availability of more abundant grassland elsewhere (Smith 1967:21). So great is the importance of overgrazing to the existence of prairie dogs in a grassland environment, that one proposed way to eliminate the animals from present day pastureland is to remove cattle to allow the ground cover to return. Overgrazing provides favorable conditions for another species represented in the faunal remains at

TABLE VI

Distribution of Mussel Remains from the Faulconer Site*

Zone	Crenondonta p.	Quadrula p.	Ligumia recta	Totals
Zone A	0	0	0	0
Zone B	19	2	1	22
Zone C	6	0	0	6
Zone D	21	2	0	23
Zone E	23	1	1	25
Zone F	21	3	1	25
Zone G	9	0	1	10
Zone H	4	1	0	5
All Zones	103	9	4	116 individuals

* Numbers of individuals.

the Faulconer site, the Plains pocket gopher (Geomys bursarius). As Hall (1955:104) states:

> "When pastures are overgrazed the grasses are partly replaced by weeds with large roots. These roots are one of the special adaptations permitting these plants to live under adverse conditions. These large roots constitute an abundant food supply for pocket gophers which thrive and multiply".

In the occupation zones at the site in which pocket gopher remains were encountered, prairie dogs are also present. Three pocket gophers are represented in the faunal remains, two individuals from Zone E and one individual from Zone B.

Several other species represented in the faunal remains from the occupation zones at the Faulconer site can not only be found in overgrazed areas, but are often concentrated in these locations. For example, utilization by jackrabbits (Lepus californicus) of overgrazed land is as much as three times as heavy as on protected areas (Taylor, et. al. 1935). Smith (1967:12) states:

> "Even the farmer-ranchers accept the fact that rabbits and various range rodents are more numerous on depleted and weedy ranges than on ranges of good vegetative cover, but almost without exception wrongly regards these mammals as the "cause" instead of the "result" of overgrazing".

Jackrabbit remains were recovered from Zones A and Zone F, the two zones marking the uppermost and lowermost occurrences of prairie dog and pocket gopher remains at the site. A single individual is represented in both instances.

Including the three species listed above, living members of other species recovered as faunal remains from the Faulconer site are found as frequent visitors to prairie dog communities (Smith 1967:19).

These species include the box turtle (Terrapene ornata), the cottontail (Sylvilagus floridanus), and the coyote (Canis latrans) which are present as faunal remains from 3 zones, Zones B, E, and H. The ornate box turtle, coyote, and cottontail remains occur in zones where pocket gopher and prairie dog remains are also present. The association of these species within the occupation zones at the Faulconer site suggests that the upland ecozone utilized by the inhabitants of the Faulconer site consisted of an overgrazed grassland area which supported a prairie dog community and attracted other species such as jackrabbits, pocket gophers, coyotes, box turtles and cottontails. It is possible that the fox (Vulpes fulva) remains recovered at the site in association with the first three species listed above, like the coyote, represent the remains of a predator of other animals attracted to the area.

Other resource utilization zones, represented by turkey (Melagaris gallopavo) and deer (Odocoileus sp.) remains, include the wooded bottomlands and its margins (Johnston 1965:19; Hall 1955:235). Deer are represented at the Faulconer site by the remains of 4 individuals, each occurring in association with upland mammals. The single turkey element from the site is from Zone B, also in association with upland mammals.

It is significant that the chert utilized at the Faulconer site is presently available in the vicinity of the site. One such outcrop is in the stream bank 75 m. west of the site location, although there is no direct evidence that the specific outcrop was utilized as a source of raw material for lithic manufacture. Evidence in the form of debitage was encountered near a chert-bearing limestone outcrop 250 m. upstream from the site. This indicates that local chert was utilized at the source of the raw material. It is suggested that the upland fauna present

in most of the occupation zones at the site indicate the existence of a depleted grassland ecozone where faunal food resources were localized. It is possible that the combined concentration of shellfish in the stream, the availability of chert in limestone outcrops nearby, and the availability to the site's occupants of upland fauna represent factors which influenced human groups to use and reuse the site as a base for exploition of the 3 ecozones and the chert resources. All the ecozones and at least one chert outcrop are presently available within a 100 m. radius of the site location.

Based on ammounts of food remains from each zone, whether or not each zone represents a single occupation or usage of the site, it is suggested that the occupations at the site were of brief duration. The postholes and mud dauber nest fragments from Zone E, however, indicate the presence of a shelter or structure in that zone, which would suggest an occupation of at least several days duration.

The non-mussel remains recovered from excavations at the Faulconer site provide no evidence for the delineation of the season of site occupation for any of the 8 occupation zones. The mussel remains, however, provide evidence which suggests that the site was occupied in late summer or early fall. It is at this time of the year that mussels are available in quantity and can be gathered with the least expenditure of effort, due to the lowering of water levels and the subsequent movement of mussels into shallower water to reproduce. Murray and Leonard (1962) recommend late summer or early fall as the best time to collect mussel specimens from present-day Kansas streams.

Although there is no direct evidence of bison exploitation in the faunal remains from the Faulconer site, bison remains recovered from a

roughly contemporaneous component of the nearby Snyder site, 4 km. to the north, establishes the presence of the large herbivore in the area. Some mechanism other than bison may have been responsible for the postulated reduction of ground cover in the upland ecozone; or perhaps bison were not in the area at the season of site occupation.

Fig. 8. Distribution of Classes of Cultural Debris Encountered in Zone A at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE A

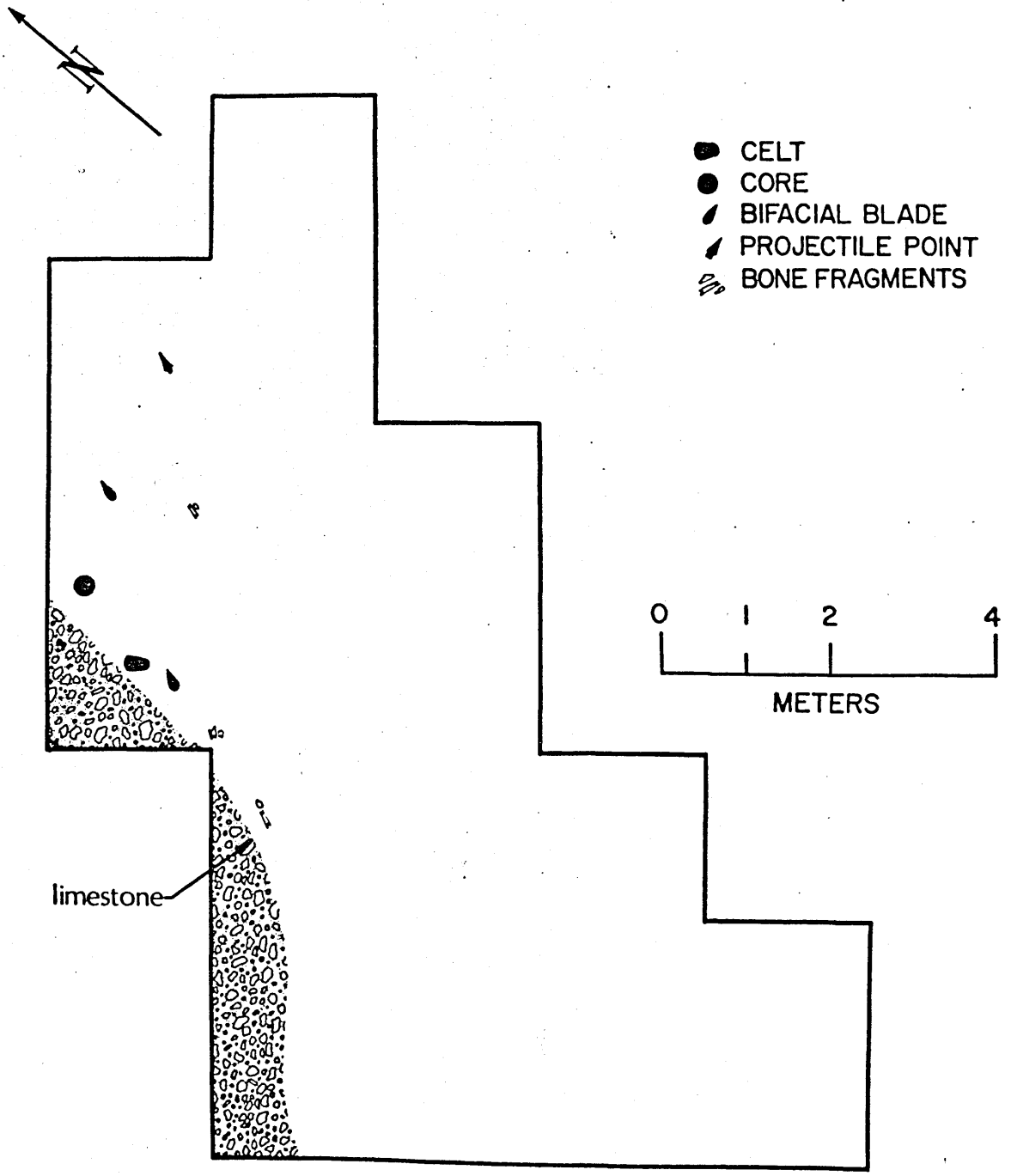


Fig. 9. Distribution of Classes of Cultural Debris Encountered in Zone B at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE B

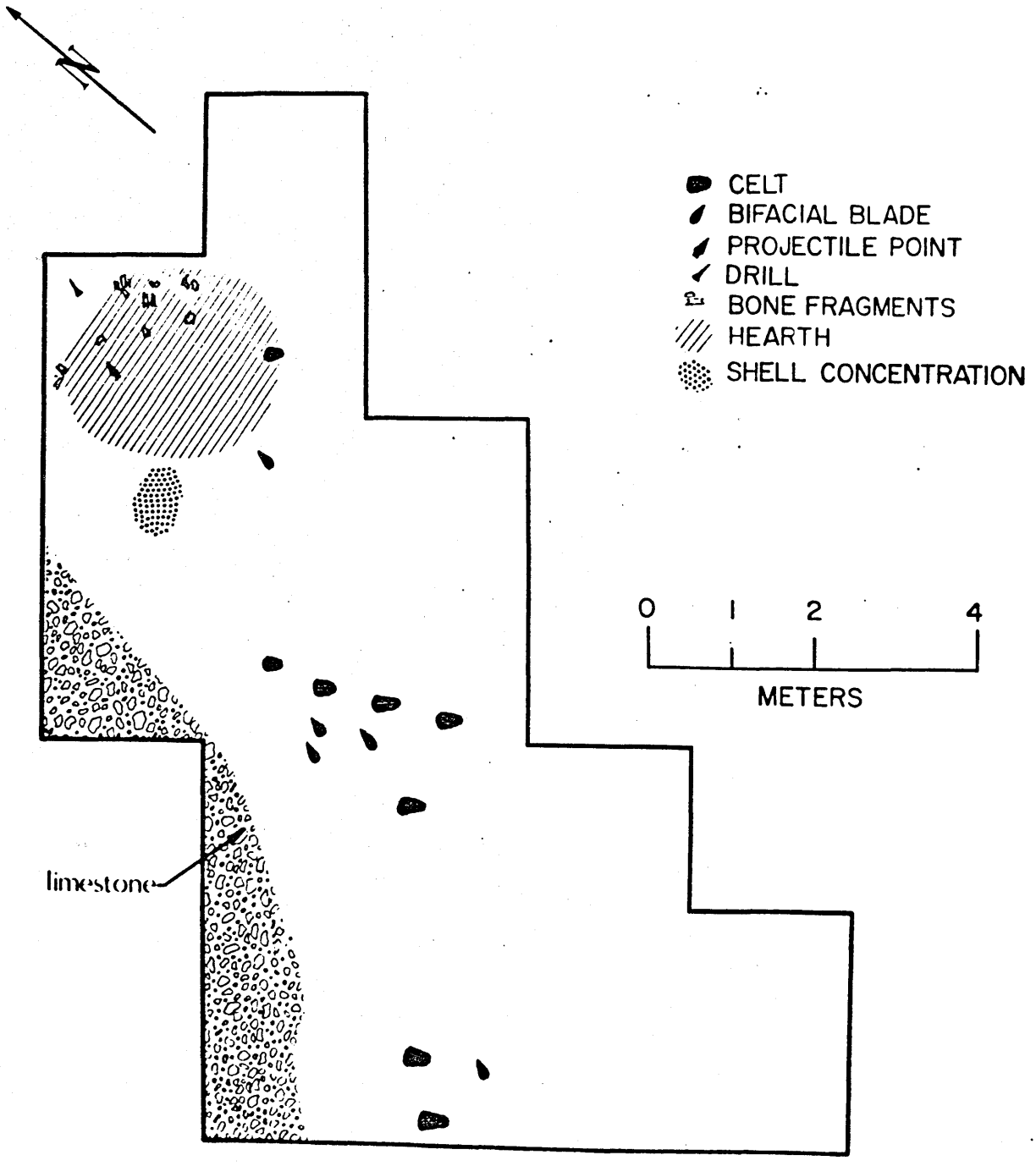


Fig. 10. Distribution of Classes of Cultural Debris Encountered in Zone D at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE D

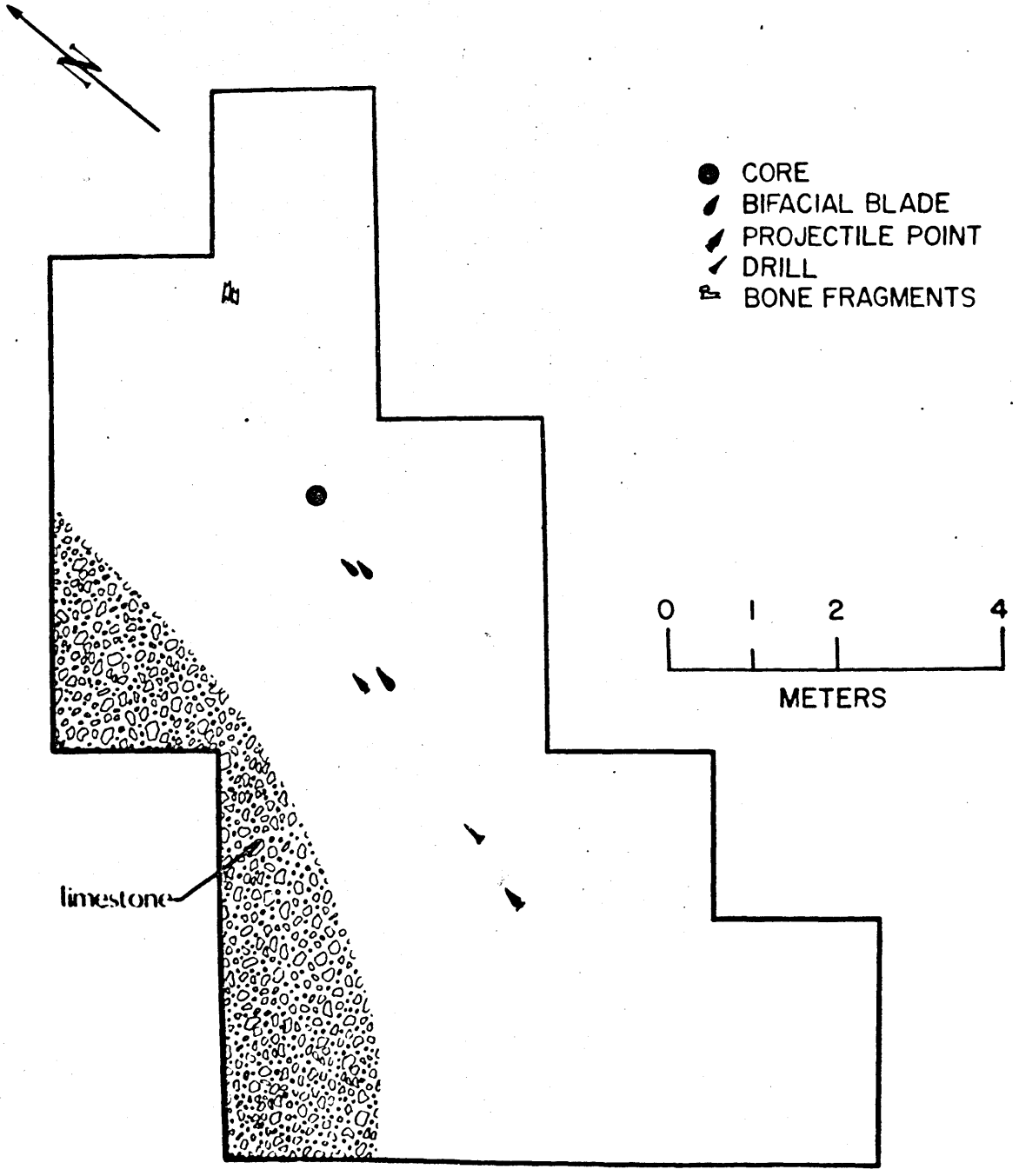


Fig. 11. Distribution of Classes of Cultural Debris Encountered in Zone E at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE E

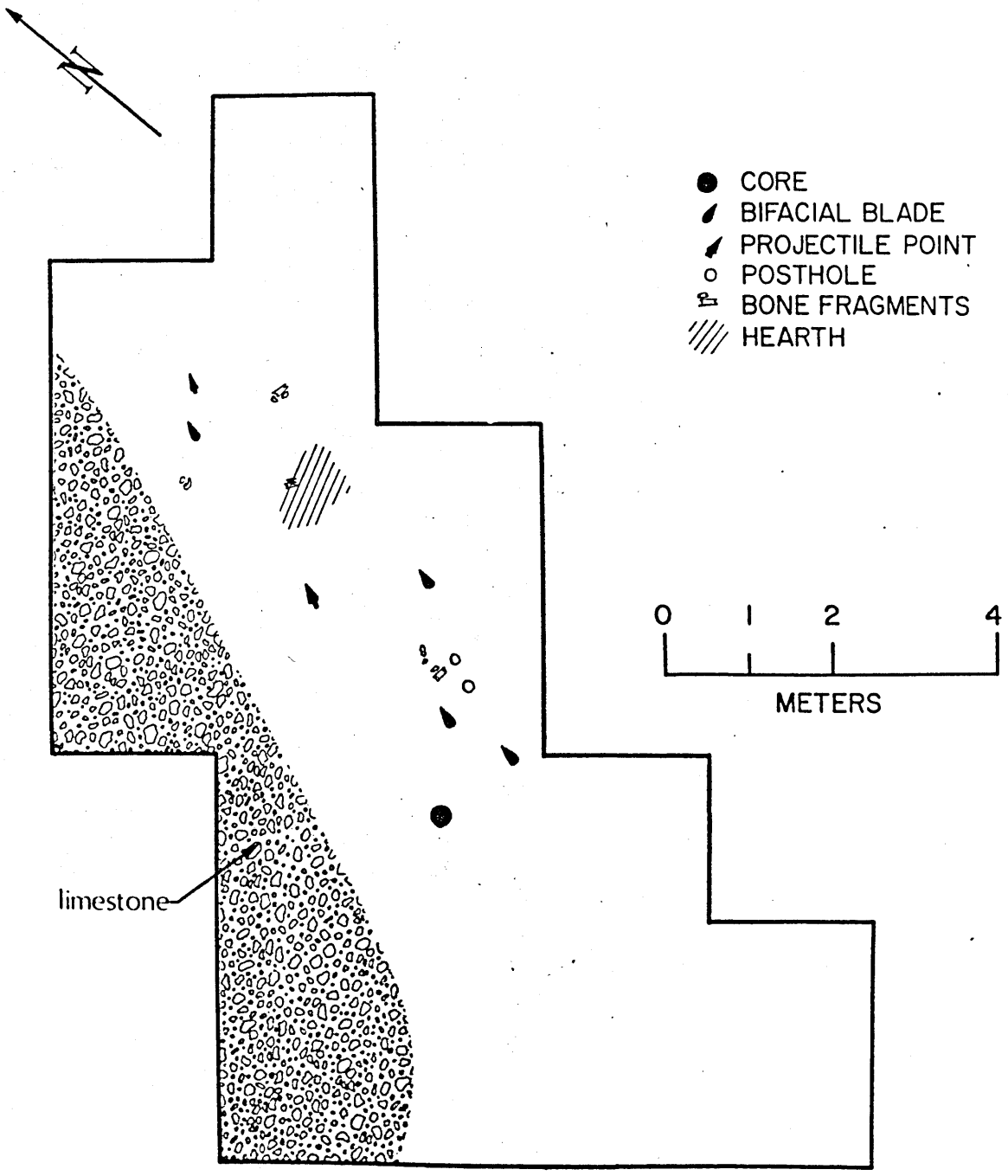


Fig. 12. Distribution of Classes of Cultural Debris Encountered in Zone F at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE F

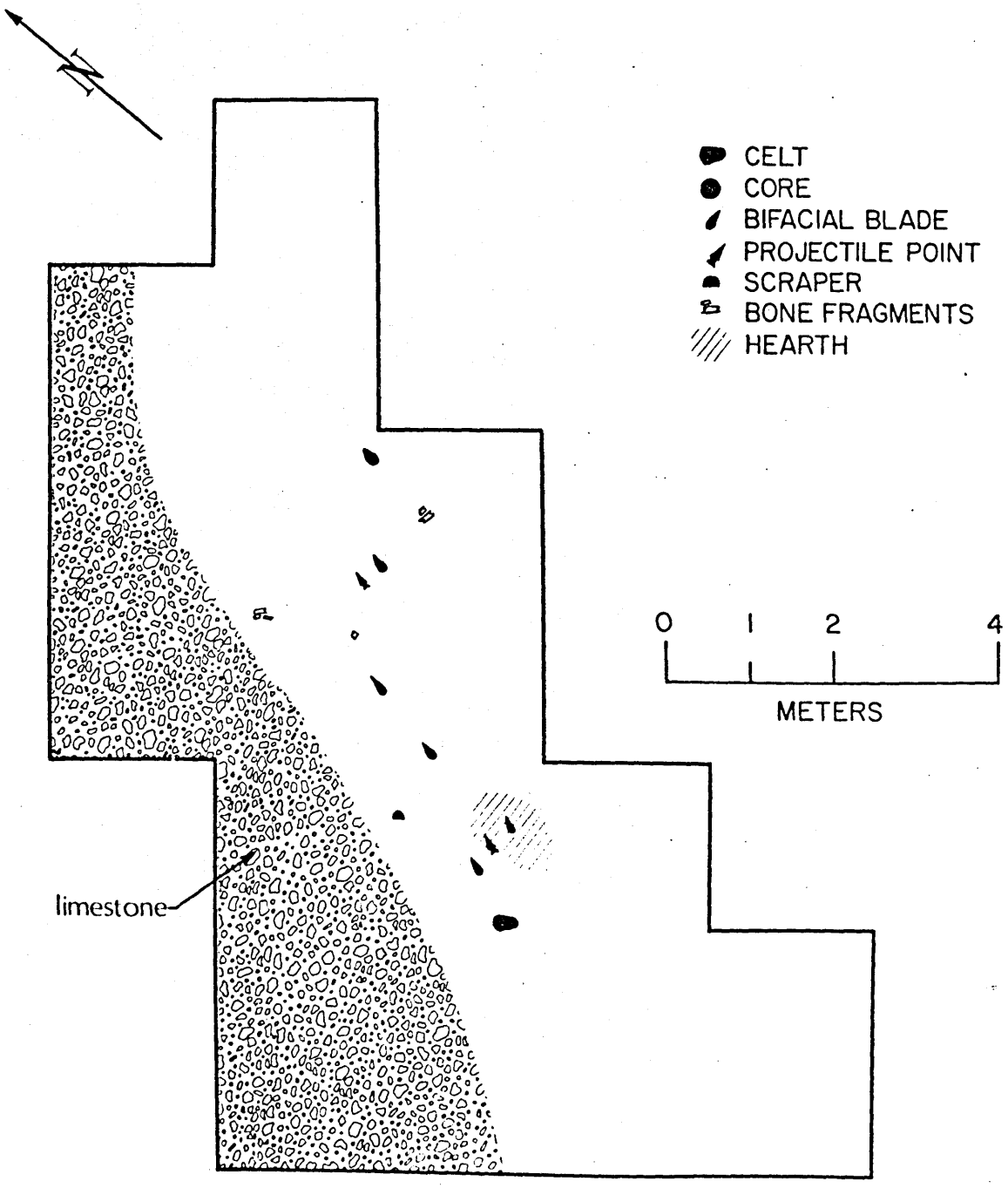
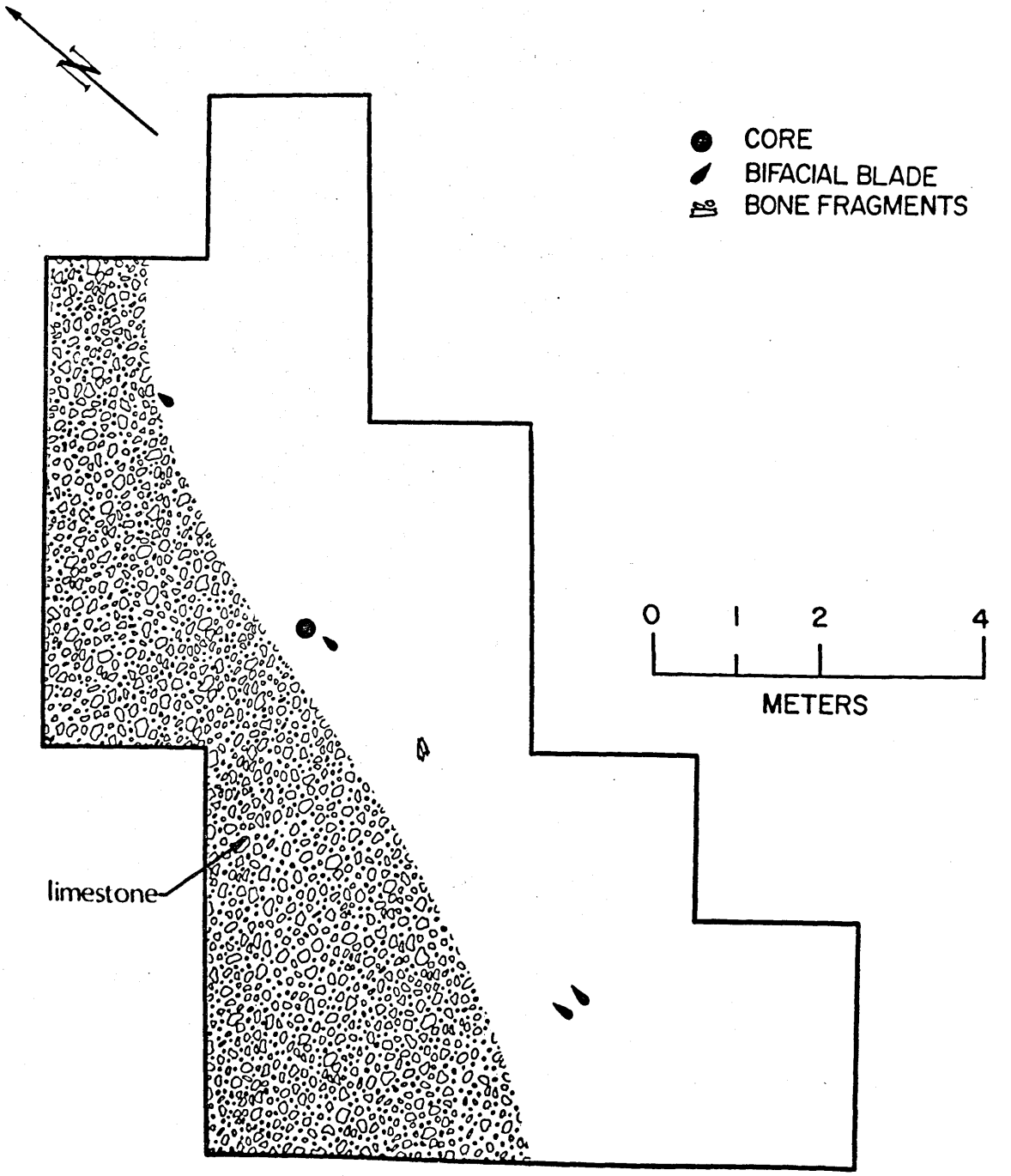


Fig. 13. Distribution of Classes of Cultural Debris Encountered in Zone H at the Faulconer Site.

THE FAULCONER SITE (14BU50)

ZONE H



CHAPTER VI

THE SUBSISTENCE STRATEGY MODEL

Since the natural environment presents a wide range and large number of potential food resources, some means of eliminating "biotic noise", which will focus subsistence activities on specific foodstuffs and assure a steady supply of food is necessary. Mapping is such a mechanism. According to Buckley (1967:63):

> "When the internal organization of an adaptive system acquires features that permit it to discriminate, act upon, and respond to aspects of the environmental variety and its constraints, we say that the system has mapped part of the environmental variety and constraints into its organization".

Some of the factors regulating the process of mapping, adapted from Trigger (1968) and Pred (1967), include:

1) Abundance of food resources; the potential food resource or combination of food resources must be available in quantities which will supply the biological needs of the exploiters.

2) Technological abilities; the potential food resource or combination of resources must be available to the exploiters within the context of their technology. A change in technology could result in a change of subsistence strategy by making available greater quantities of a given resource, or by making a hitherto inaccessable resource available.

3) Social acceptability; the potential resource(s) must be socially acceptable.

4) Chance selection and subsequent utilization.

5) Energy potential; the energy expenditure to acquire the resource cannot exceed the energy potential of the resource(s) (White 1971:368). Within the category of mapped food resources, further selections are made by means of a strategy involving subsistence activities, a subsistence strategy. A strategy may be thought of as a plan for action having options or alternatives. The strategy could be represented by a set of imperative statements, some of which could be modified by conditional phrases (Fishburn 1964). For example, if A and B represent subsistence resources and X and Z represent conditions or states such as climate or the size of the group of exploiters, the subsistence strategy would take the following form: Exploit A under conditions X. The conditional phrase would appear as: If condition Z occurs, then exploit B. Condition Z could be responsible for a changed state of the environment in which resource A exists, or could be responsible for a changed state within the group of exploiters. In either case, the change would result in a modified or different state in which resource A would no longer provide the necessary biological needs of the group. The faunal remains from the Faulconer site suggest that three such states, States 1 through 3, existed during the accumulation of cultural debris at the site. The exact conditions responsible for the maintenance of each state are unknown at this time. The faunal remains from the site suggest that the first change, from State 1 to State 2, was due to human factors, while the change from State 2 to State 3 was probably due to climatic factors. As described below, the conditional phrases of the subsistence strategy provide mechanisms which allow a shift in exploitative activities necessitated by the change from one state to another and the subsequent

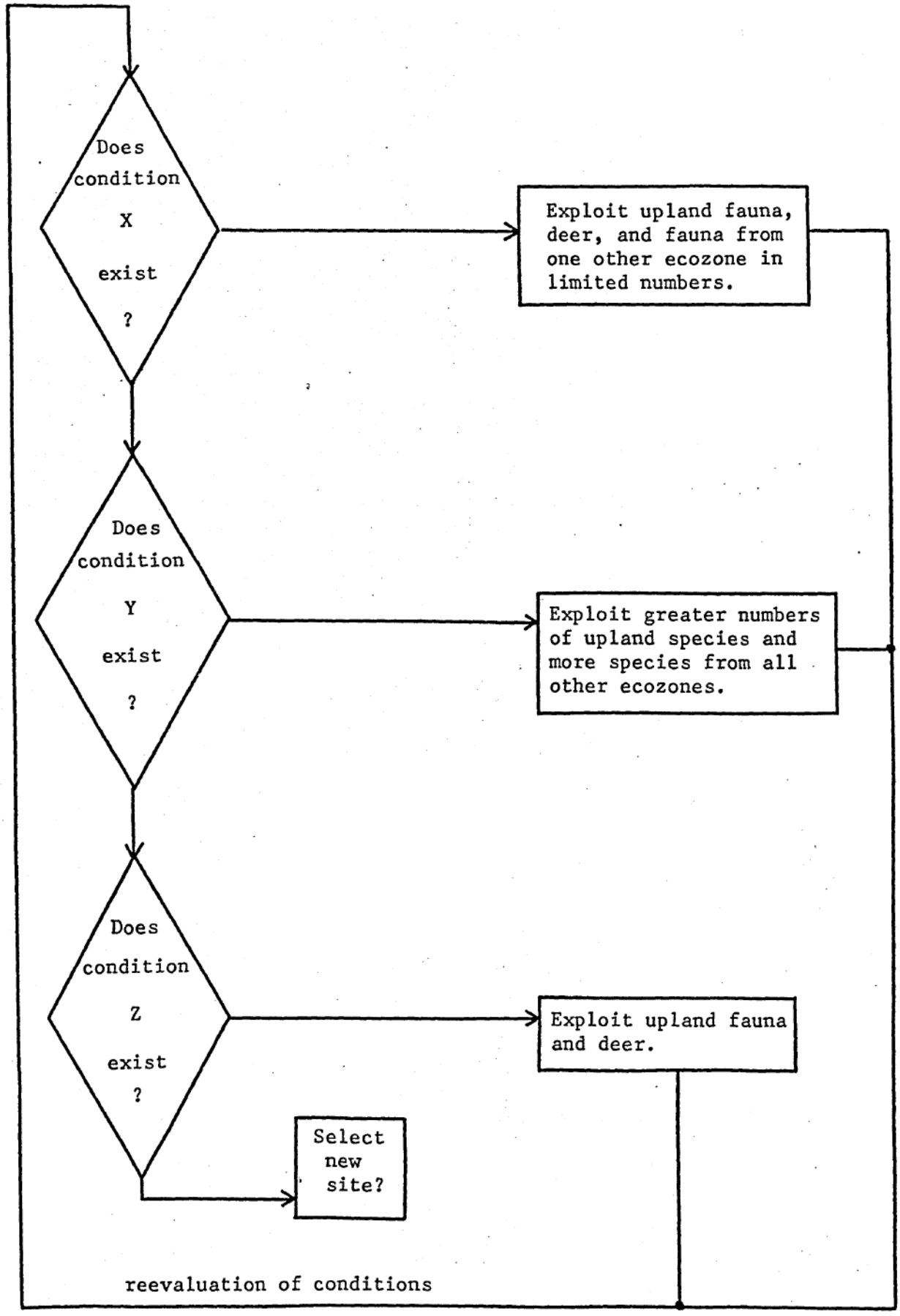
change in resource availability or group size (Fig. 14). A model of the subsistence strategy for the Faulconer site follows:

INITIAL STRATEGY: During State 1 at the Faulconer site upland fauna was exploited as was fauna from one additional ecozone. Faunal remains from Zones C through H indicate the limited exploitation of small upland fauna, the exploitation of deer from the margins of the uplands and the utilization of mussels from streams. This exploitative pattern continues, with slight variations in the numbers and species taken, during the accumulation of the fill of the 6 zones mentioned above. Also occurring at this time, was the deposition of colluvial limestone fragments. The subsistence strategy for the duration of State 1 takes the form: Exploit small upland fauna, deer, and mussels.

The first conditional phrase of the subsistence strategy provides the transition between the state represented by the faunal remains from Zones H through C and that represented by the faunal remains from Zone B at the site.

CONDITIONAL PHRASE 1: If condition Y occurs, then exploit greater quantities of upland fauna and exploit more species and all other ecozones. Zone B at the Faulconer site has been dated at about 1150 B.C. and represents State 2, a time of increased pressure on the environment near the site. Not only are new species exploited during this time, but a formerly unexploited ecozone, the wooded bottomlands, is also utilized. One upland species, the prairie dog, was exploited in larger numbers. Colluvial deposition continued as during State 1 at the site, suggesting that condition Y was not a change in climatic factors. A similar increase in the number of exploited species and number of exploited ecozones has been described, at roughly the same time, for the El Dorado

Fig. 14. Flowchart of the Subsistence Strategy at the Faulconer Site.


Does condition X exist ?
Exploit upland fauna, deer, and fauna from one other ecozone in limited numbers.
Does condition Y exist ?
Exploit greater numbers of upland species and more species from all other ecozones.
Does condition Z exist ?
Exploit upland fauna and deer.
Select new site?
reevaluation of conditions

phase at the nearby Snyder site (14BU9) (Table VII). The two sites, the Faulconer site and the Snyder site, probably represent two different seasonal occupations, due to the abundance of mussels at the Faulconer site and the presence of large upland mammals at the Snyder site. The increased pressure on the environment at both sites was probably due to an increase in the size of the group of exploiters. The conditional phrase for the subsistence strategy marking the transition from State 1 to State 2 becomes: If condition Y occurs, then exploit greater quantities of small upland mammals, exploit new species, some of which are located in previously unexploited ecozones. Dates from the Snyder site indicate that the change began at about 2000 B.C. and ended at about 1000 B.C. (Grosser 1970) with a return to limited exploitation of one or two ecozones marking the beginning of State 3. The second conditional phrase provides the transition between the State represented by the remains recovered from Zone B (State 2) and those found in Zone A (State 3). CONDITIONAL PHRASE 2: If condition Z occurs, then concentrate subsistence activities on upland fauna and deer. The contact between Zones A and B at the Faulconer site marks the upper limits of the occurrence of colluvial limestone fragments, suggesting that condition Z was a change in the agent responsible for their deposition. During State 3, it is possible that the source of the colluvial fragments was interrupted, or that ammount of precipitation diminished. Evidence for the latter condition is provided by the presence of mussel remains in other zones at the site, and their absence from Zone A. Faunal remains indicate that the uplands and the margins of wooded bottomlands were again exploited. At the Snyder site, during the Walnut phase occupation (Grosser 1970), the focus of subsistence activities was concentrated on large mammals in

the same ecozones as those exploited at the Faulconer site. The subsistence strategy becomes further modified by the addition of a conditional statement to account for the transition from State 2 to State 3: If condition Y occurs, then exploit the uplands and margins of wooded bottomlands. In summary, 3 states were defined from the faunal remains at the Faulconer site. During the first and third states a limited number of animals were taken from 2 ecozones. State 2 represents a greater number of exploited ecozones and an increased number of exploited species. Evidence from the nearby Snyder site (14BU9) indicates a similar series of states during the same time periods. Although no dates or evidence for season of occupation are available for the Milbourn site (14BU25), the faunal remains (Table VIII) indicate an almost total reliance on upland fauna and deer. For this reason, it is suggested that the site was occupied during State 3, when subsistence activities were concentrated on that ecozone at the Faulconer and Snyder sites.

Suggestions for further research in the El Dorado reservoir area include the excavation of additional components of Archaic sites and the dating of those components to locate settlements exhibiting the 3 states proposed above. The floral exploitative pattern at each site should be examined and compared with that of the pattern of faunal exploitation, to determine if the States 1 through 3 are also reflected in the floral remains. Faunal and floral evidence from outside the reservoir area should then be compared with that from contemporaneous sites in the reservoir area to determine the geographic extent of the changes and states proposed above.

TABLE VII

Associated Faunal Material at the Snyder Site (14BU9) *

Species	Walnut phase	El Dorado phase	Chelsea phase
Antilocapara americana, antelope		2	1
Bison bison, American bison	3	4	1
Bufo cognatus or woodhausia, toad		3	
Canis latrans, coyote		3	
Castor canadensis, beaver		3	
Cynomys ludovicianus, prairie dog		1	
Geomys bursarius, Plains pocket gopher		2	
Lepus californicus, jackrabbit		2	
Lutra canadensis, river otter		2	
Microtus ochrogaster/pinetorium, prairie or pine vole	1	5	1
Odocoileus virginianus, white-tailed deer	4	6	3
Ondatra zibethicus, muskrat		1	
Procyon lotor, raccoon		1	
Scalopus aquaticus, eastern mole	1	6	1
Sylvilagus floridanus, eastern cottontail		8	3
Taxidea taxus, badger		2	
Fresh-Water Mussels (present, but not identifiable)		**	

*Minimum numbers of individuals. Adapted from Grosser (personal communication).

TABLE VIII

Associated Faunal Material at the Milbourn Site (14BU25) *

Species	Zone C	Zone D	Zone E
Antilocapra americana, antelope		1	
Bison bison, American bison	1	1	1
Lepus californicus, jackrabbit		1	
Odocoileus virginianus, white-tailed deer		2	1
Terrapene ornata (?)		1	1

*Minimum numbers of individuals. Adapted from Grosser (personal communication).

CHAPTER VII

SUMMARY

The Faulconer site, located at the valley edge of a tributary of the Walnut River in south-central Kansas, is an Archaic site dating from the latter part of the second millennium B.C. Excavations at the site during the summer of 1972 produced evidence of 8 nearly horizontal occupation zones within almost 2 m. of site fill composed of colluvial limestone fragments and silt. Faunal remains from the site represent 3 ecozones; the stream, wooded bottomlands, and the uplands. Although bison remains are recovered from other Archaic sites in the area, none were encountered at the Faulconer site. Stages of lithic manufacture at the site include the complete range of processes from nodule breakage to final retouch. The importance of heat treating of chert after cortex removal, at the site, is indicated by the quantities and percentages of heat discolored debitage specimens. The site location was probably selected due to the presence of fauna in the 3 nearby ecozones and the availability of chert in nearby limestone outcrops. The presence of mussel remains from the site suggests that the site was occupied during late summer or early fall when this food resource was available in quantity. The subsistence strategy, reconstructed from faunal remains from the Faulconer site, was one initially aimed at the uplands and the stream. It is hypothesized that changes in group size, at around

1000 B.C., brought about an increased pressure on the environment, resulting in heavier exploitation of more faunal species taken from all ecozones of the area. A return to limited exploitation of the uplands is hypothesized for the last occupation at the site. At this time, mussel utilization ceased. It is suggested that a decrease in precipitation caused an adjustment of the subsistence strategy. Faunal remains from two other Archaic sites in the reservoir area, the Snyder site (14BU9) and the Milbourn site (14BU25) indicate a similar pattern of upland faunal exploitation followed by an expansion of species exploited, then a return to upland faunal exploitation.

Testing of the 2 hypotheses stated above should include a comparison of floral and faunal evidence from other sites dating to 1000 B.C. and later to determine if evidence of the proposed changes is present.

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APPENDIX A

Dimensions of Bifacial Blades from the Faulconer Site

Zone	Condition	Length	Width	Thickness
Zone A	complete	87 mm.	50 mm.	16 mm.
	distal fragment	27 mm.	46 mm.	12 mm.
Zone B	complete	87 mm.	58 mm.	24 mm.
	complete	67 mm.	40 mm.	21 mm.
	complete	61 mm.	25 mm.	8 mm.
	distal fragment	46 mm.	50 mm.	14 mm.
	proximal fragment	40 mm.	27 mm.	9 mm.
Zone D	complete	75 mm.	48 mm.	16 mm.
	proximal fragment	59 mm.	47 mm.	11 mm.
	medial fragment	48 mm.	35 mm.	10 mm.
Zone E	complete	75 mm.	32 mm.	8 mm.
	complete	74 mm.	32 mm.	8 mm.
	complete	70 mm.	36 mm.	8 mm.
	distal fragment	57 mm.	40 mm.	8 mm.
Zone F	complete	100 mm.	51 mm.	13 mm.
	distal fragment	68 mm.	48 mm.	13 mm.
	complete	66 mm.	34 mm.	14 mm.
	proximal fragment	41 mm.	35 mm.	12 mm.
	distal fragment	34 mm.	31 mm.	6 mm.
Zone H	complete	63 mm.	30 mm.	9 mm.
	complete	62 mm.	34 mm.	13 mm.
	proximal fragment	48 mm.	37 mm.	11 mm.

APPENDIX B

Dimensions of Projectile Points from the Faulconer Site

Zone	Type	Condition	Length	Width	Thickness
Zone A	contracting stem	complete	74 mm.	34 mm.	7 mm.
Zone B	base missing	----	59 mm.	21 mm.	7 mm.
Zone D	contracting stem	base fragment	24 mm.	20 mm.	5 mm.
	side notched	tip missing	45 mm.	22 mm.	8 mm.
Zone E	base missing	----	53 mm.	22 mm.	7 mm.
	contracting stem	complete	65 mm.	31 mm.	8 mm.
Zone F	straight stem	complete	67 mm.	22 mm.	8 mm.
	lanceolate form	complete	50 mm.	28 mm.	7 mm.

APPENDIX C

Dimensions of Selected Tools from the Faulconer Site

Zone	Tool Type	Condition	Length	Width	Thickness
Zone A	Celt	complete	79 mm.	75 mm.	25 mm.
	Core	----	69 mm.	57 mm.	28 mm.
Zone B	Celt	complete	78 mm.	67 mm.	25 mm.
	Celt	bit fragment	49 mm.	23 mm.	90 mm.
	Celt	bit fragment	30 mm.	85 mm.	20 mm.
	Celt	bit fragment	27 mm.	67 mm.	32 mm.
	Celt	bit fragment	29 mm.	56 mm.	12 mm.
	Celt	bit fragment	47 mm.	68 mm.	29 mm.
	Celt	bit fragment	34 mm.	67 mm.	22 mm.
	Celt	bit fragment	37 mm.	62 mm.	25 mm.
	Drill	complete	59 mm.	22 mm.	8 mm.
Zone D	Core	----	81 mm.	54 mm.	36 mm.
	Drill	tip missing	59 mm.	19 mm.	7 mm.
Zone E	Core	----	57 mm.	61 mm.	35 mm.
	Antler Tool	complete	135 mm.	tapers from 5 to 20 mm.	
Zone F	Celt	complete	78 mm.	71 mm.	38 mm.
	Scraper	complete	57 mm.	37 mm.	8 mm.
Zone H	Core	----	31 mm.	34 mm.	13 mm.