PRELIMINARY FAUNAL ANALYSIS

Shoofly Village 1984

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SHOOFLY CHAPTER
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ABSTRACT

Shoofly Village is a major archaeological site near present-day Payson, Arizona. Initial excavation was undertaken by the Payson Archaeological Research Expedition during the summer of 1984.

The original research design suggested recovering data from a variety of sources. Faunal recovery and analysis was visualized as a means of investigating dietary, environmental, and formation aspects of Shoofly.

The report which follows summarizes the objectives and actualities of the faunal recovery plan implemented at Shoofly Village during the summer of 1984. Preliminary analysis results are presented to suggest the character of the faunal remains. Reassessment and concluding remarks propose modifications to the recovery and analysis design which could be beneficially implemented during subsequent field seasons.

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PREFACE

Preceding the formal beginning of this paper, I would like to take this opportunity to thank the many people who have assisted me in the formulation, implementation, and summation of the faunal recovery program for the 1984 season at Shoofly Village. Lynn Christenson suggested pertinent readings and appropriate field techniques. Joanne Miller spent many endless days with the flotation equipment, first obtaining the heavy fraction, later the faunal portion, and is thanked for devoting the labor which I would have had to otherwise provide. Jane Bradley presented me with access to valuable mammology references, acted as a consultant, and added enthusiasm to my occasionally waning interest. Dr. Frank Bayham started me on my intial foray into the faunal literature, suggested field methods which he had applied successfully in the past, proposed the expected range of faunal types at Shoofly, and, later, gave gentle critiques of preliminary analyses, field methods, and laboratory practices. Dr. A. E. Dittert proposed field procedures and conservation practises. And foremost gratitude to Dr. Charles L. Redman, for giving me the opportunity to work with the faunal program at Shoofly Village, from first planning to this report. I hope that the time spent discussing the faunal recovery strategy; the time and expense in acquiring the odds and ends that were needed for field collection and lab processing; and the patience exerted during the first frustrating attempts at building a realistic faunal approach, the last minute changes in focus, and delays in receiving this report, are all partially repaid by the results, suggestions, and insights contained

in this report.

Naturally, any errors in fact or interpretation are the sole responsibility of the author.

INTRODUCTION

Shoofly Village is a major archaeological site located near Payson, Arizona. The site is suggested to have been occupied during the 12th and 13th centuries by the Southern Sinagua, Salado, or local populations. Although the site has been known to archaeologists and local residents for over fifty years, no significant archaeological investigation had been initiated until the field program of the Payson Archaeological Research Expedition during the summer of 1984. The study, implemented as a field school through the Department of Anthropology at Arizona State University, under the direction of Dr. Charles L. Redman, represents the first archaeological research into the cultural residuals at Shoofly Village (Kelley and Redman 1984).

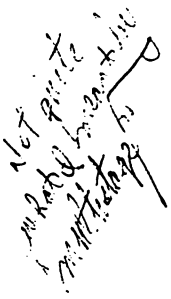
The research design for excavations at Shoofly Village emphasized a multifarious data collection scheme with multi-stage analysis (after Chamberlin 1965; Redman 1973). Initial analytical stages were designed to describe the range of variation at Shoofly. The description phase is basic to subsequent projects utilizing hypothesis-testing approaches or more specific collection or analytical techniques.

Faunal material was collected from Shoofly Village as a part of the overall recovery program. Faunal remains were suggested to be primary in reconstructing the environment at the time

of habitation, retrieving dietary information, and discerning the formation history of the locale.

INITIAL RESEARCH DESIGN

Conception of a faunal recovery plan began in the spring of 1984. Recognition of the impracticality of final analyses of faunal remains while in the field resulted in an adoption of a multi-stage analytical scheme. Three basic stages were visualized: (1) field collection, (2) field analysis, and (3) laboratory analysis.



The field collection stage of the research design addressed recovery techniques and conservation practises in transporting remains to the laboratory. To be consistent with the site-wide approach, recovery of faunal remains utilized the same practices and equipment as in retrieval of other types of the material culture. Faunal materials were to be uncovered through normal excavation practises (as outlined in Dancey 1981 and Joukowsky 1980) and during screening of soil through quarter-inch hardware cloth screens. Unusually fine or fragile pieces were to be preserved with a mixture of Brown's Formula Preservative and Earthpack. All specimens would then be placed in cotton-batting, vials, and bags.

Field analysis was designed to generate results of faunal analyses on a daily or near-daily basis. Cleaning of recovered items would be limited to coarse removal of soil with tweezers and probes. Analysis utilized a series of gross faunal categories (Figure One) to describe the assemblage. These were to be: (1) large mammal, (2) small mammal, (3) bird, (4) other identifiable

PAYSON ARCHAEOLOGICAL RESEARCH EXPEDITION

Initial Faunal Analysis Form
Department of Anthropology
Arizona State University

SITE: ANALYST'S NAME:

UNIT DESIGNATION: DATE ANALYZED:

LEVEL: BAG SPEC #:

BONE TYPE		WEIGHT (gr)	COUNT
LARGE MAMMAL -	Unburnt		
	Burnt		
SMALL MAMMAL -	Unburnt		
	Burnt		
BIRD -	Unburnt		
	Burnt		
OTHER FAUNA -	Unburnt		
	Burnt		
INDETERMINANT -	Unburnt		
	Burnt		

COMMENTS: _____

fauna types, and (5) indeterminant forms. In addition, each category would be divided into burnt, unburnt, and indeterminant states. Entries for each division would be weighed and counted. More specific identifications, of genus or species were to be suggested after comparison with reference texts (Gilbert 1980). The field analysis findings were to computerized on the field school's IBM PC portable computer utilizing data base (d-Base II by Ashton-Tate) and statistical (ABSTAT by Anderson Bell) software. Daily reports were planned through the report writing capabilities of the data base system with weekly summations of a more exploratory nature.

The laboratory analysis stage was envisioned as fine-cleaning the faunal material and conducting species identification on each specimen.

THE 1984 FIELD SEASON

The implementation of the faunal recovery research design during the 1984 field season at Shoofly Village resulted in the retrieval of 1894 faunal bones or bone fragments (This figure does not include several bones recovered near the termination of the field season). The preliminary faunal analysis suggested that a variety of faunal orders were represented in the recovered assemblage. The vast majority of elements were from large mammal and indeterminant classes. Preliminary field analysis findings are summarized, by unit, in Figure Two.

As might have been anticipated, the realities of implementation necessitated a series of changes in the faunal recovery research design. The field collection strategy was modified to streamline

SHOOFLY PRELIMINARY FAUNAL ANALYSIS SUMMARY - BY UNIT

UNIT		LARGE MAMMAL				SMALL MAMMAL				BIRD				OTHER FAUNA				INDETERMINANT			
		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt	
		W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C
E041	N141					0.6	2											7.9	21	2.0	7
58	121			0.5	1													1.2	5		
59	123																	7.2	7	2.1	8
66	88			2.7	2	0.3	1											1.5	6	6.2	28
67	148																	1.8	6	1.4	7
74	108																			0.5	2
77	40	1.6	1	1.0	1															0.9	5
78	128																	1.2	9	0.6	4
81	65																	0.5	2	0.7	3
85	143	23.6	24			0.2	1											9.1	34	2.6	10
86	85	1.5	1	14.6	2	2.8	4	1.7	4									9.2	47	13.2	68
87	145					2.0	12														
89	165	16.1	6	6.3	6	9.6	22											9.1	39	15.3	45
94	105																	0.1	1		
98	125																	0.5	2		
101	60					0.6	3											1.3	11	0.9	6
106	80	74.5	22			0.1	1	0.3	1									4.9	68	2.8	18
108	102	20.7	1																		
109	160			1.2	1			0.2	1											0.1	1
110	64			1.1	1																
111	110	42.2	28	5.3	1	3.4	11											18.3	54	3.7	9
113	124	0.7	1	1.6	1													1.9	6	3.8	15
118	120	3.0	2															1.4	3	0.1	2
121	74																	0.3	1	2.1	9
123	158	3.7	3	3.3	3	3.4	10											18.6	72	4.1	14
126	94	39.3	17															0.2	8		
127	154	113.9	103					0.2	2									10.7	71		
128	109																	0.9	4	0.4	1
129	164	2.8	3			1.3	3											1.9	10	1.4	23
129	174	365.9	34	2.4	2	1.9	5	0.2	1									7.3	29	3.7	16
130	125	4.8	5	0.6	1													2.6	13	1.4	5
133	142	8.6	1	2.1	1													2.5	6	2.1	7
134	114	55.7	25	118.8	75	2.5	9			0.6	1							22.5	93	55.3	202
141	71	104.2	15	8.2	4	0.8	2			0.3	1			1.9	5			10.2	32	2.4	5
147	151	4.4	2	1.1	1	0.1	1													5.5	24

(Continued)

SHOOFLY PRELIMINARY FAUNAL ANALYSIS SUMMARY - BY UNIT (CONTINUED)

UNIT	LARGE MAMMAL				SMALL MAMMAL				BIRD				OTHER FAUNA				INDETERMINANT			
	Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt	
	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C
E148 N101	156.3	2			0.4	1											2.2	14	7.6	27
154 111																			0.7	2
161 73																	0.4	1	1.0	2
167 93																	0.3	2	2.3	14
167 153																	0.2	1	2.0	10
174 113					0.2	1											0.6	2	0.3	1
176 103	6.7	4	1.8	2	5.7	12			1.2	1							5.7	16	7.0	26
178 133	0.6	2			5.8	6							0.1	1			2.7	10		
178 148	2.2	2			0.2	2											0.4	4	1.5	8
180 159					1.1	2											0.5	5	1.8	7
TOTALS	1053.0	304	171.9	105	43.0	111	2.6	9	2.1	3	0.0	0	2.0	6	0.0	0	167.8	715	159.5	641

recovery practices. The use of Brown's Formula Preservative and other labor-intensive field methods was severely limited to elements that were determined to be either unusual or in extremely good condition. Due to a variety of conditions, including time delays in developing a computerized data bank, the excessive amount of time needed for preliminary analyses, and similar processing delays, the field analyses failed to generate reports on the daily interval suggested by the research design. The objective of quick analysis summations is still viewed as of primary importance in guiding, on a daily basis, excavation programs, but was sacrificed during the 1984 season for time spent in developing a realistic computerized data base, a greater familiarity with the faunal assemblage, and meaningful analytical practises. One new analytical procedure was to look at portions of the faunal assemblage in terms of the type of area from which they were derived. The presumed locus type, or PLT, was utilized to group elements from similar architectural features. The results of this procedure are summarized in Figure Three. Although there was too much concentration on certain types of features, a lack of uniformity in deciding PLT type, and not enough excavation of the site as a whole to make accurate or meaningful generalizations about the association, this is a potentially valuable configuration which might be derived with future seasons and the development of a means of determining the actual amount of soil removed in an excavation unit.

Final analysis practises have not been initiated, and therefore, have not been modified.

SHOOFLY PRELIMINARY FAUNAL ANALYSIS SUMMARY - BY PLT

PLT	LARGE MAMMAL				SMALL MAMMAL				BIRD				OTHER FAUNA				INDETERMINANT			
	Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt		Unburnt		Burnt	
	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C
CR	19.8	9	9.6	9	13.0	32											27.7	111	19.4	59
OUTM	104.2	15	8.2	4	0.8	2			0.3	1			1.9	5			10.2	32	2.4	5
OUTO					0.6	2											7.9	21	2.0	7
PAR			1.2	1			0.2	1									0.3	1	2.9	12
POP	5.9	3	18.4	5	5.4	19	1.7	4									15.7	77	30.2	149
RRL	809.3	206	124.2	79	6.0	18	0.7	4	0.6	1							52.5	301	76.0	290
RRM	34.4	27	0.5	1	0.4	3											13.2	49	6.2	25
RRS			1.1	1																
WEX																	0.4	1	1.0	2
WINT	0.6	2			5.8	6							0.1	1			2.9	11	2.0	10
UNKNOWN	78.8	42	8.7	5	11.0	29			1.2	1							37.0	111	17.4	82
TOTALS	1053.0	304	171.9	105	43.0	111	2.6	9	2.1	3			2.0	6			167.8	715	159.5	641

REASSESSMENT OF THE RESEARCH DESIGN

The initial research design for the recovery of faunal remains at Shoofly Village has served to structure the preliminary archaeological investigation. The termination of the 1984 field season calls for a period of reflection or reassessment, with an objective of generating a research design for subsequent seasons.

The primary problems with the 1984 research design were an inability to produce daily summations of the field analyses; difficulties in designing meaningful categories for field classification and making these compatible with the capabilities of the computer system; and an overbalance of identification of elements as indeterminant type.

Future investigations at Shoofly Village should emphasize similar, broad classificatory divisions. Family level classification would be beneficial in defining the categories and deriving greater amounts of preliminary information from at least the large mammal type. The problems of dealing with more variables than the 32 allowed in the d-Base II system might be corrected through installation of an expansion package, like d-B Plus (which increases the array maximums), or through a linked system of subprograms. Report writing difficulties might be simplified through the definition of the computer "function keys" as printing routines (as is possible through Prokey software). The tendency for identifications to default to indeterminant status will have to be revised through greater familiarity with osteological identification on the part of the field analysis personnel.

Other modifications to the research design include: (a) field cleaning, by washing, of recovered elements, to aid identification and speed analysis; (b) direct incorporation of smaller elements recovered during flotation, as a means of deriving a broader and more accurate description of the assemblage; (c) superior controlled excavation methods, including screening with screens with smaller apertures, to recover greater numbers of smaller elements, and assessment of the amount of soil being removed during excavation, to enable density calculations and comparative statements; and (d) soil sample collections, for the purpose of determining the soil characteristics which might influence the formation sequence.

SUMMARY AND CONCLUSIONS

Faunal assemblages have been suggested to be important data bases for deriving environmental conditions, dietary patterns, and formation information. The faunal recovery program designed for Shoofly Village is an attempt to maximize the amount of data retrieved during surface collection and excavation. The multi-stage nature of the analytical process is incorporated as a means of dealing with constraints of time and varied research objectives or problems.

The initial research design, as summarized in the text, was essentially an attempt to anticipate the conditions and constraints of the Shoofly assemblage before any excavation had been undertaken. Implementation of the research design yielded insights which were used as immediate reforms or suggestions for future revisons.

At this juncture, I propose a second generation of faunal recovery research designs for Shoofly Village, which would utilize a three stage retrieval program. General field recovery would continue to rely on the site-wide recovery program of excavation and screening. Supplemental studies would use a sampling strategy (as yet unspecified) for denoting portions of the soil for screening through smaller apertures and for use in chemical samples. Conservation techniques would continue to use Brown's Formula Preservative for finer specimens, and vials, cotton, and bags for all collections. A system for controlling for the amount of soil removed in a given unit must still be designed.

The second stage, that of field analysis, would include washing and classifying all specimens. Flotation specimens will be classified in a similar fashion. All faunal data would be entered into a computer data base. Daily status reports would be generated as a guide to excavation. Summaries for completed rooms or features would be issued to aid in interpretations of room function and the like. Concurrent analysis would handle the faunal assemblage as a whole, attempting to describe and characterize its nature.

The third stage, the laboratory analysis, would determine the species identification of the elements in the assemblage.

In conclusion, the initial field design and its implementation during the 1984 field season have combined to generate a series of modifications to the faunal recovery program. These form the nucleus for a research design for future investigations. Further insights from the impending laboratory phase, sophistication

of objectives during interm studies, and incorporation of the findings of other data categories, should combine to create a superior faunal recovery research design for the 1985 field season.

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