Analysis of Plant and Animal Remains from the Buzzard Rock site (44RN2)

prepared by:
Amber M. VanDerwarker

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Archaeological plant and animal assemblages represent only a small fraction of what was originally used and deposited by humans in open-air settings. Natural and cultural factors can significantly modify organic remains, resulting in recovered assemblages that differ dramatically from the original deposits. As archaeologists, we examine collections that have undergone a series of processes—from the original selection of plants and animals by humans, to food preparation, cooking, discard, animal and insect scavenging, burial, decay, and weathering, to the recovery of food residues by archaeologists. Using standard methodological procedures for sampling, quantification, and analysis allows us to make sense of our assemblages in spite of the deleterious effects of these processes. Here I report on the identification and analysis of the archaeobotanical and zooarchaeological assemblages from the Buzzard Rock site, Virginia. I treat the plant data first, followed by the animal data. In each section, I present a basic discussion of recovery/preservation issues, quantitative methods, and laboratory procedures. This is followed by the results and analysis of the data. Finally, I discuss the patterns identified in each assemblage as a means to reconstruct more general subsistence practices at the site.

THE ARCHAEOBOTANICAL ASSEMBLAGE

Recovery and Preservation Bias

The circumstances under which plants preserve best archaeologically involve extreme conditions (e.g., exceptionally wet, dry, or cold environments) that prohibit decomposition of organic matter (Miksicek 1987). Plants can also preserve through exposure to fire, which can transform plant material from organic matter into carbon (Miksicek 1987). The likelihood that a plant will become carbonized varies according to the type of plant, how it is prepared and used, and whether it has a dense or fragile structure (Scarry 1986). Plants that are eaten whole are less likely to produce discarded portions that may find their way into a fire. Plants that require the removal of inedible portions (e.g., hickory nutshell, corn cobs) are more likely to find their way into a fire, and thus into the archaeological record. Inedible plant parts represent intentional discard that is often burned as fuel. Moreover, because inedible portions tend to be dense and fibrous, they are more likely to survive the process of carbonization than the edible parts (e.g., hickory nutshell vs. nutmeats). Physical characteristics are also important for determining whether or not a plant will survive a fire. Thick, dense nutshells are more likely to survive a fire than smaller, more fragile grass seeds. Food preparation activities also affect potential plant carbonization. The simple process of cooking provides the opportunity for carbonization through cooking accidents. Foods that are conventionally eaten raw, however, are less likely to be deposited in fires than cooked foods.

Some plants that find their way into the archaeological record in carbonized form were not eaten at all. Wood fuel is the most obvious example. Burned house structures can also yield carbonized plant deposits, and these deposits often differ dramatically from refuse deposits (Scarry 1986). Other non-food plants that become carbonized are incidental inclusions, such as seeds blown by wind dispersal (Miksicek 1987; Minnis 1981; Scarry 1986). Indeed, most secondary invaders are weedy species with lots of seeds (e.g., cheno/am plants) (Minnis 1981).

While we cannot ever hope to know the absolute quantities or importance of different plants in any past subsistence economy, the preservation and recovery biases discussed above do not prohibit quantitative analyses of archaeobotanical assemblages. The most commonly used plant resources in any subsistence economy are more likely to be subject to activities that result in carbonization (e.g., through fuel use and accidental burning) and ultimately, deposition

(Scarry 1986; Yarnell 1982). Thus, we can quantitatively examine the relative importance of commonly-used plant resources through time and across space.

Methods of Quantification

Quantitative methods in archaeobotany have developed significantly over the past several decades, and as a result, have been a subject of much critical discussion (Hastorf and Popper 1988). The most common methods for recording and quantifying plant remains are counts and weights. Because of problems with comparability between different types of plant taxa, however, raw (or absolute) counts and weights are not appropriate comparative measures (Scarry 1986). For example, denser taxa yield higher weights than more fragile taxa, and some taxa yield higher seed counts than others (e.g., grasses versus fruits) (Scarry 1986). Thus, using absolute counts or weights to summarize plant data is highly problematic. Most archaeobotanists agree that absolute counts are inadequate for assessing past people-plant interactions in that they do not control for biases related to preservation and sampling error (Kandane 1988; Miller 1988; Popper 1988; Scarry 1986). Absolute counts and weights are simply raw, unstandardized data.

One way to avoid the problems of absolute counts/weights is through the use of ubiquity measures (Godwin 1956; Hubbard 1975, 1976, 1980; Popper 1988, Willcox 1974). This type of analysis is essentially a presence/absence analysis that sidesteps the problems of counts and weights by measuring the frequency of occurrence instead of abundance. In other words, ubiquity analysis measures the number of samples in which a taxon was identified, as opposed to the number of specimens represented by that taxon. The researcher first records the presence of a specific taxon in each sample, and then computes the percentage of all samples in which the taxon is present (Popper 1988). For example, if acorn shell is present in four out of ten samples, then its ubiquity value is 40%. Thus, each taxon is evaluated independently (Hubbard 1980). Because different types of plants are disposed of differently, direct comparisons of ubiquity values between taxa are problematic (Hubbard 1980:53). For example, a 70% ubiquity value for hickory nutshell would not be equivalent to a 70% ubiquity value for beans as these categories have different preservation opportunities—hickory nutshell represents a processing by-product often used as fuel, while beans represent edible portions.

As with any quantitative measure, ubiquity analysis has its disadvantages. A sufficient number of samples is necessary to provide meaningful results as using too few samples creates a high likelihood of sampling error. Hubbard (1976:60) suggests a minimum of 10 samples. Moreover, although ubiquity analysis may mitigate for preservation biases, it is not immune to them (Hubbard 1980:53; Scarry 1986:193). Most importantly, because ubiquity deals with occurrence frequency and not abundance, it can potentially obscure patterns where occurrence frequency does not change but abundance does (Scarry 1986). As Scarry (1986:193) notes: "the frequency with which a resource is used may remain constant, while the quantity used varies." For example, a family may consistently eat corn on a daily basis, but the quantity they consume may vary from day to day. Despite these weaknesses, ubiquity analysis is a good starting point and can provide meaningful results when used alongside other measures.

While ubiquity measures may sidestep the problems inherent in absolute counts, it does not provide a means for calculating relative abundances of different plant taxa. Using comparative ratios is one way of determining the relative abundances of different plants. Essentially, calculating a ratio is a means of standardizing raw measures. In other words, we can deal with the problems of absolute counts and weights by standardizing them in terms of some constant variable (Miller 1988; Scarry 1986). The density measure standardizes data in terms of

soil volume—the absolute count or weight of carbonized plant material (for individual taxa or for larger collapsed categories, e.g., corn kernels or corn) is divided by total soil volume for each sample or context. Density measures calculate the abundance of plants per liter of soil, and it is generally assumed that larger volumes of soil will yield more plant remains. However, differences in the context and manner of deposition between soil samples structure the relationship between soil volume and the size of the plant assemblage. For example, a 10 L soil sample from an intact house floor would probably yield a smaller sample of carbonized plant remains than a 10 L soil sample from a refuse midden, because people tend to keep their houses cleaner than their trash dumps. Moreover, standardizing by soil volume does not control for the range of non-plant related activities that contribute to the deposit from which the soil sample derives. In other words, the density measure does not consider plant remains in terms of plant-related activities, but rather in terms of all of the activities that are represented in the deposit.

Thus, if the analyst is interested in determining the importance of a specific plant relative to the other plants in a sample or context, then density measures may be inadequate. Rather, standardizing by plant weight might be more appropriate (Scarry 1986). Unlike the density measure, standardizing by plant weight considers the contribution of a specific plant or category of plants solely in terms of plant-related activities. As a result, a plant weight ratio more accurately reflects spatial and temporal differences in plant use. As a quantitative category, plant weight is a sum of weights recorded for all carbonized plant specimens per sample or context. Thus, for each sample, there is a total weight of plant material—this figure is the denominator used to standardize the variable of interest.

Overall, ratios are useful quantitative tools that overcome some of the problems of absolute counts. It is important to understand, however, that ratios reveal only the relative importance of plants within varied depositional contexts, not the absolute dietary contribution of actual resources used in the past (Scarry 1986).

Laboratory Procedures

Flotation samples from the Buzzard Rock site were collected as 15 L samples. Both the light and heavy fractions of the flotation samples were analyzed. Although the materials from the light and heavy fractions were processed and sorted separately, data from the two fractions were combined for analysis. According to standard practice, the light fractions were weighed and then sifted through 2.0 mm, 1.4 mm, and 0.7 mm standard geological sieves. Carbonized plant remains from both fractions were sorted in entirety down to the 2.0 mm sieve size with the aid of a stereoscopic microscope (10–40 X). Residue less than 2.0 mm in size was scanned for seeds, which were removed and counted; in addition, taxa encountered in the 1.4 mm sieve that were not identified from the 2.0 mm sieve (e.g., acorn nutshell) were also removed, counted, and weighed.

Botanical materials were identified with reference to a seed identification manual (Martin and Barkley 1961) and the paleoethnobotanical comparative collection at the University of North Carolina (UNC) Research Laboratories of Archaeology. All plant specimens were identified to the lowest possible taxonomic level. Taxonomic identification was not always possible—some plant specimens lacked diagnostic features altogether or were too highly fragmented. As a result, these specimens were classified as “unidentified” or “unidentified seed.” In other cases, probable identifications were made—for example, if a specimen closely resembled a corn cupule, but a clear taxonomic distinction was not possible (e.g., the specimen was highly

fragmented), then the specimen was identified as a probable corn cupule and recorded as "corn cupule cf.".

Once the plant specimens were sorted and identified, I recorded counts, weights (in grams), portion of plant (e.g., corn kernels versus cupules), and provenience information. Wood was weighed but not counted, and no wood identification was conducted. Generally, most of the seeds identified in the samples were too small to weigh, and thus only counts were recorded. Hickory nutshell and corn remains were identified only as fragments, and were both counted and weighed. Other than counts and weights, no other measurements were taken on any specimens. In some cases, taxon counts were estimated by their respective weights. For example, features 102 and 135 were represented by 21 and 30 flotation samples, respectively; most of these samples consisted of hundreds of grams of corn kernels. For each light and heavy fraction that yielded more than 500 corn kernels, the absolute number of corn kernels was extrapolated from the weight of a sub-sample of 500 corn kernels with respect to the weight of all corn kernels in the light or heavy fraction sample. The equation is expressed below:

$$\frac{x}{b} = \frac{500}{a} \quad \rightarrow \quad ax = 500b \quad \rightarrow \quad x = \frac{500b}{a}$$

where *a* is the weight of the sub-sample of 500 corn kernels, and *b* is the weight of the entire sample of corn kernels; *x* is the variable to solve for.

Basic Results

This section presents the results of the identification of the carbonized plant remains from the Buzzard Rock site, which forms the basis for the quantitative analysis that follows. Plant data from flotation samples are summarized by site in Table 1 (data summary by feature are listed in Appendix A). Raw counts and weights are provided for each taxon; plant weight, wood weight, and soil volume are also provided. Seasonality data are provided in Table 2. Macrobotanical data recovered through ¼-inch screening are listed according to feature/unit contexts in Table 3.

A total of 246 flotation samples from 102 features were collected and analyzed, representing a total of 3,690 liters of soil with a total plant weight of 4,993 grams. Combined, these samples yielded 27 plant taxa, including corn, a variety of nuts and fruits, and several miscellaneous seeds (Tables 1). Corn (*Zea mays*), bean (*Phaseolus* sp.), and sumpweed (*Iva annua*) were the only definitive field cultigens present in the samples. Corn and beans are often discussed together as they commonly represent partner crops. Whether or not they co-evolved as part and parcel of the same domestication process, corn and beans have a long tradition of inter-cropping and successional cropping in the New World (Lentz 2000). Inter-cropping corn and beans is often beneficial in that corn stalks support the bean vines throughout plant growth (Smartt 1988:149). Moreover, inter-cropping also reduces the risk of pest and disease outbreaks than in pure stands (Smartt 1988:149). Corn and beans are also complementary in terms of nutritional value; corn is deficient in essential amino acids lysine and isoleucine, which beans have in abundance (Bodwell 1987:264; Giller 2001:140). Thus, in addition to the benefits of cropping corn and beans together, there are also benefits to eating corn and beans together.

Nutshell recovered from the Buzzard Rock flotation samples includes acorn (*Quercus* sp.), hickory (*Carya* sp.), and walnut (*Juglans* sp.). Acorn was the most abundant nut recovered

from at Buzzard Rock, followed closely by hickory. Interestingly, acorn and hickory rarely co-occur in the same features. While the nutmeats of walnuts can be easily extracted from the shell, hickory nuts and some acorns require extensive processing before they are rendered palatable (Petruso and Wickens 1984). The hickory kernels are so tightly enmeshed in the interior shell that picking the nutshells from the cracked shell casing is a time-consuming task. Instead, hickory nuts were generally pounded into pieces and boiled to extract the oil (Ulmer and Beck 1951). The process of boiling the pounded hickory nuts separates the pieces of shell, which sink to the bottom of the pot, from the oil, which rises to the top as the nutmeats dissolve and can be skimmed off or decanted. This oil or milk would then be used as an added ingredient in soups and stews, as a condiment for vegetables, or as a general sauce or beverage (Scarry 2003; Talalay et al. 1984).

Acorn processing depends upon whether the nuts derive from white or red oak trees. Nuts from the red oak are high in tannin and are extremely bitter as a result. White oaks, however, yield sweeter nuts; the nutmeats from these acorns can be used for cooking immediately after extraction from the shell (Scarry 2003). The tannin present in the bitter acorns, however, requires an additional processing step. Leaching the tannin from acorns can be accomplished either by soaking them in water, or parching and then boiling them with an alkaline substance such as wood ash. Once processed, acorns were generally ground into a fine meal, which could then be used to make gruel, bake bread, or thicken stews. Less often, acorns were boiled and the oil extracted (Swanton 1946:260, 277).

Fruit taxa recovered from the samples are represented by a combination of wild and domestic species. The only definitive domesticated fruit identified was peach (*Prunus persica*), represented by only two fragments. The presence of peach, an Old World species, does not necessarily indicate direct contact with Europeans. Rather, this species was probably incorporated into native food systems through traditional exchange networks (Gremillion 1993)[1]. Several wild grape (*Vitis* sp.) seeds were also identified, in addition to hawthorn (*Crataegus* sp.) and persimmon (*Diospyros virginiana*).

A variety of miscellaneous seeds was also identified in the Buzzard Rock assemblage. These include amaranth (*Amaranthus* sp.), bearsfoot (*Polymnia uvedalia*), bedstraw (*Galium* sp.), bullgrass cf. (*Paspalum boscianum* cf.), bulrush (*Scirpus* sp.), chenopod (*Chenopodium* sp.), copperleaf (*Acalypha ostryaefolia*), doveweed (*Croton* sp.), holly (*Ilex* sp.), knotweed (*Polygonum* sp.), morninglory (*Convolvulus*/*Ipomoea* sp.), purslane (*Portulaca* sp.), sage cf. (*Salvia* sp. cf.), sedge (*Carex* sp.), smartweed (*Polygonum* sp.), tickclover (*Desmodium* sp.), and wildbean (*Strophostyles* sp.). People probably collected and consumed the seeds of amaranth, bearsfoot, chenopod, knotweed, smartweed, and sumpweed. Amaranth, chenopod, knotweed, purslane, and smartweed, in addition to doveweed and wildbean, may also have been eaten green or as potherbs (Hedrick 1972; Medsger 1966, Ulmer and Beck 1951). Chenopod (*Chenopodium* sp.), a common weed throughout the southeastern U.S., is represented in the assemblage by 71 seeds. It is unlikely that the chenopod seeds identified here represent domesticates as seed coat thickness for these specimens is more consistent with wild chenopod[2].

[1] Peach may have also extended its range naturally throughout the southeastern U.S. (Gremillion 1993).
[2] Domesticated and wild chenopod can be distinguished based on thickness of the inner seed coat; domesticated chenopod has a much thinner seed coat than its wild counterpart (Smith 1985).

Table 1. Summary of plant taxa for Buzzard Rock (44RN2) flotation samples.

N of Samples	246		
Total Volume (liters)	3690		
Plant Weight (grams)	4933.12		
Wood Weight (grams)	1591.96		
		(Count/Weight)	
Common Name	*Taxonomic Name*	(n)	(g)
CROPS			
Corn cob	*Zea mays*	3	0.76
Corn cupule	*Zea mays*	658	3.72
Corn cupule cf.	*Zea mays* cf.	1	0.00
Corn kernel	*Zea mays*	165594	3293.02
Corn kernel cf.	*Zea mays* cf.	2	0.00
Bean	*Phaseolus* sp.	12	0.14
NUTS			
Acorn shell	*Quercus* sp.	3401	7.01
Acorn shell cf.	*Quercus* sp. cf.	5	0.00
Acorn cap	*Quercus* sp.	1	0.00
Acorn meat	*Quercus* sp.	25	1.10
Acorn meat cf.	*Quercus* sp. cf.	3	0.02
Hickory shell	*Carya* sp.	2431	30.77
Hickory shell cf.	*Carya* sp. cf.	5	0.03
Hickory husk	*Carya* sp.	3	0.15
Hickory meat	*Carya* sp.	1	0.01
Hickory meat cf.	*Carya* sp. cf.	8	0.16
Walnut shell	*Juglans* sp.	53	2.31
Walnut family cf.	Juglandaceae	2	0.02
FRUITS			
Grape	*Vitis* sp.	28	0.07
Hawthorn	*Crataegus* sp.	10	0.03
Hawthorn cf.	*Crataegus* sp. cf.	1	0.00
Peach	*Prunus persica*	2	0.04
Persimmon	*Diospyros virginiana*	15	0.21
Persimmon cf.	*Diospyros virginiana* cf.	1	0.02
OTHER SEEDS			
Amaranth	*Amaranthus* sp.	7	0.00
Bean family	Fabaceae	2	0.00

Bean/Persimmon	*Phaseolus*/*Diospyros* sp.	2	0.00
Bearsfoot	*Polymnia uvedalia*	46	0.02
Bearsfoot cf.	*Polymnia uvedalia* cf.	2	0.00
Bedstraw	*Galium* sp.	22	0.00
Bullgrass cf.	*Paspalum boscianum* cf.	1	0.00
Bulrush	*Scirpus* sp.	3	0.00
Cheno/am	*Chenopodium*/*Amaranthus* sp.	18	0.00
Chenopod	*Chenopodium* sp.	71	0.00
Copperleaf	*Acalypha ostryaefolia*	17	0.00
Doveweed	*Croton* sp.	1	0.00
Euphorbia family	Euphorbiaceae	1	0.00
Grass family	Gramineae	7	0.00
Holly	*Ilex* sp.	1	0.00
Knotweed	*Polygonum* sp.	2	0.00
Knotweed cf.	*Polygonum* sp. cf.	1	0.00
Knotweed family	Polygonaceae	2	0.00
Morninglory	*Convolvulus*/*Ipomoea* sp.	1	0.00
Morninglory cf.	Convolvulaceae	1	0.00
Purslane	*Portulaca* sp.	2	0.00
Sage cf.	*Salvia* sp. cf.	2	0.00
Sedge	*Carex* sp.	1	0.00
Smartweed	*Polygonum* sp.	1	0.00
Sumpweed	*Iva annua*	6	0.00
Sumpweed cf.	*Iva annua* sp.	1	0.00
Tick clover	*Desmodium* sp.	1	0.00
Wildbean	*Strophostyles* sp.	2	0.02
Unidentified seed		55	0.00
UNIDENTIFIED		248	1.53

Weedy seeds that probably represent incidental inclusions in the assemblage include bedstraw, bullgrass, bulrush, copperleaf, sedge, and tickclover. Bedstraw may also have been consumed as a tea and the weedy legume may have been used as food (Hedrick 1972; Peterson 1977). Some species of morninglory produce edible tubers, although the seeds identified in the samples might simply be field weeds (Medsger 1966). Notable is the *Ilex* seed identified in Feature 27; although this holly seed could not be identified to species, it is possible that it represents yaupon holly (*Ilex vomitoria*), a ritual plant known as the primary ingredient in the native Black Drink. Finally, two possible sage seeds were identified in the sample from Feature 17; the identification of sage is not certain, but there are four species of the genus *Salvia* that are

native to region. These possible sage seeds may represent an incidental inclusion or they might have been used medicinally.

An assessment of seasonality for these plants indicates the harvesting and collection of resources from April through December (Table 2). Most fruits are available from mid to late summer. Corn and beans begin to ripen in the mid-summer and continue to be harvested throughout the early fall. The ripening of the fall nut mast begins in September with acorns; hickories and walnuts begin to ripen in October. Collectively, the seasonality information gleaned from the plant remains points to a year-round occupation at the Buzzard Rock site. Nuts and corn could have been dried and stored for consumption during the lean winter months. Indeed, the sheer quantity of carbonized corn kernels in features 102 and 135 (see "Data Analysis" section below) indicates that people shelled and stored large quantities of corn at the site (though this is not to say that features 102 and 135 represent storage locations).

Taxa identified from the macrobotanical remains were limited to large specimens greater than 2.0 mm in size (Table 3). Not surprisingly, no carbonized seeds were identified among the macrobotanical specimens. Rather, the macrobotanical assemblage consists of large wood specimens, corn kernels and cupules, acorn meat, and nutshell from hickories and walnuts.

Table 2. Seasonality of Buzzard Rock (44RN2) plant taxa in ascending order by bloom.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Holly				X	X							
Bedstraw					X	X	X	X				
Purslane					X	X	X	X	X			
Peach						X	X					
Copperleaf						X	X	X	X	X		
Doveweed							X	X				
Corn							X	X	X			
Amaranth							X	X	X			
Bearsfoot							X	X	X			
Bulrush							X	X	X			
Bean							X	X	X	X		
Chenopod							X	X	X	X	X	
Knotweed							X	X	X	X	X	
Morninglory							X	X	X	X	X	
Smartweed							X	X	X	X	X	
Wildbean								X	X			
Sage cf.								X	X			
Grape								X	X	X		
Tick clover								X	X	X		
Hawthorn									X	X		
Persimmon									X	X		
Acorn									X	X	X	
Sumpweed									X	X	X	
Hickory										X		
Walnut										X		
Sedge										X	X	X

Table 3. Identified plant remains from Buzzard Rock (44RN2) macrobotanical samples.

Feature/Unit	Wood	Corn Kernel *Zea mays*		Corn Cupule *Zea mays*		Bean *Phaseolus* sp.		Acorn meat, *Quercus* sp.		Hickory Shell *Carya* sp.		Walnut Shell *Juglans* sp.		Unidentified	
	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
F7	5.03									4	0.20				
F14	0.22									19	1.15				
F16	12.47														
F17	167.36														
F20	0.29														
F27	0.74									14	0.49				
F33										1	0.09				
F37	3.41	37	1.05							9	0.79	1	0.09	2	0.13
F40	0.47														
F41	0.44									2	0.08				
F42	1.46									2	0.09				
F43	0.61									5	1.64	1	0.25		
F46	4.13									29	3.31	1	0.13		
F47	0.03									1	0.11				
F48	0.85														
F49	0.17														
F50	3.41														
F52	0.03														
F54														1	0.01
F63	0.27									2	0.07				
F64	0.10														
F66	1.24														
F67	0.10														
F73	0.30									1	0.22				
F87	3.01									1	0.05				
F88	1.44														
F89	0.59														
F90	0.38														
F91	135.59					16	0.20								
F92	0.55									9	0.39			1	0.01

F95	0.09														
F98	193.47	10	0.10									2	0.13		
F102	0.01	512	83.18											5	0.01
F104	0.63														
F105	0.90														
F110	0.41									1	0.12				
F112	0.11														
F115	2.46					4	0.06								
F117	0.64	1	0.11												
F120	0.52														
F127	0.25											1	0.16		
F128	0.21														
F130	0.07														
F135		893	54.83	1	0.01										
F136	0.31														
F142	5.53	5	0.12							6	1.60				
F145	3.25									13	1.46	1	0.13		
F148	1.47														
F151	0.91														
F156	1.53							1	0.21						
F157										1	0.05				
F111B	0.25														
F153A										2	0.07				
F153B	0.12														
F54C	0.05														
F94A	1.38														
F97B	0.14														
TU18	1.67														
TU24	5.51														
TU32	3.33														
TU34	0.59														
TU42	0.45														
TU48	3.09														
TU N5121e5018	0.09									6	0.33				

Data Analysis

Analysis of the plants identified in the Buzzard Rock assemblage is restricted to data from flotation samples. Plant specimens identified in the macrobotanical samples are too few and biased in terms of size. The goal of the analysis is two-fold: (1) to assess the overall importance of different plants at the Buzzard Rock site, and (2) to determine which features differ significantly in terms of the abundance and representation of different plant foods.

To assess the importance of different plants in the Buzzard Rock assemblage, I use ubiquity analysis (Table 4). Ubiquity analysis essentially measures the relative presence of different taxa at the site. I used the feature as the level of aggregation for determining ubiquity values. For example, 246 flotation samples were collected from 102 features; wood was identified in all 102 features, resulting in a ubiquity value of 100%. The two most ubiquitous plant foods at the site are hickory and corn, yielding ubiquity values of 88% and 82%, respectively. After these two resources, there is a huge fall-off in terms of feature representation—acorn and chenopod yield much lower values of 28% and 22%, respectively. It is interesting that acorn is so much less ubiquitous than hickory, considering that acorn is actually more abundant in the assemblage than hickory (see Table 1). After acorn and chenopod, a set of five plants yielded values ranging from 10-15%, including walnut, grape, and various potherbs (bedstraw, bearsfoot, and copperleaf). The remaining fruits and seeds from the site yielded ubiquity values of less than five percent. Collectively, these ubiquity values indicate that corn and nuts occur most frequently in the assemblage, thus highlighting their important in the day-to-day subsistence economy.

Table 4. Ubiquity values for plant taxa at Buzzard Rock (44RN2).

Common Name	Features Present	Total Features	Ubiquity Value
Wood	102	102	100%
Hickory (all parts)	90	102	88%
Corn (all parts)	84	102	82%
Acorn (all parts)	29	102	28%
Chenopod	22	102	22%
Walnut	15	102	15%
Bedstraw	14	102	14%
Grape	13	102	13%
Bearsfoot	11	102	11%
Copperleaf	10	102	10%
Amaranth	4	102	4%
Bean	4	102	4%
Sumpweed	4	102	4%
Bulrush	3	102	3%
Hawthorn	3	102	3%
Persimmon	3	102	3%

Knotweed	2	102	2%
Peach	2	102	2%
Purslane	2	102	2%
Wild bean	2	102	2%
Doveweed	1	102	1%
Holly	1	102	1%
Morninglory	1	102	1%
Sedge	1	102	1%
Smartweed	1	102	1%
Tick clover	1	102	1%

To determine which features differ significantly in terms of the abundance and representation of different plant foods, I use box plots (see also Cleveland 1994; McGill et al. 1978; Scarry and Steponaitis 1997; Wilkinson et al. 1992). Box plots summarize distributions of data using several key features (Figure 4.1). The median value of the distribution is marked by the line at the center of the box. The edges of the box, or hinges, represent the 25th and 75th percentiles of the distribution—the approximate middle 50% of the data fall between the hinges (Cleveland 1994:139). Vertical lines, or whiskers, extend outward from the box and represent the tails of the distribution. Box plots also designate outliers—these are unusually large or small data values that "portray behavior in the extreme tails of the distribution" (Cleveland 1994:140). Outliers are depicted as asterisks and far outliers as open circles.

The outliers on the box plots are of particular interest because they represent those features that do not conform to the overall distribution of features in terms of some variable. The first variable that I explore is the amount of plant food represented in each feature per liter of soil. This variable is calculated as the weight of carbonized plant food remains divided by the total volume of soil floated for each feature. These data are plotted in Figure 1. Only two features are represented in the distribution as outliers—features 102 and 135. Both features yielded significantly more plant food remains than any other features at the site.

If we look at these features more closely (see Appendix A), we notice the sheer amount of corn recovered from them. Corn was by far the most abundant plant taxon at the site—a total of 166,255 corn fragments were identified, with 99.6% of corn remains represented by kernels. The vast majority of these corn kernels (99.3%) come from features 102 (n = 87,736 kernels) and 135 (n = 76,846 kernels). Interestingly, there are few other plant materials in these features. The soil matrix surrounding the corn kernels from feature 102 appeared oxidized, suggesting *in situ* burning. It is unlikely that 87,000+ corn kernels were carbonized as part of a giant cooking accident. Similar features were identified at the Upper Saratown site (A.D. 1670-1710) in North Carolina's north-central piedmont (Eastman 1996, 1999). These large oval/circular features (52 and 170) were filled with massive amounts of carbonized plant foods, including several thousand corn kernels (Eastman 1996; VanDerwarker et al. 2005). Like features 102 and 135 at Buzzard Rock, the two Upper Saratown features also differed statistically from other features at the site in terms of the amount of plant foods recovered, especially corn. The sheer quantity of discarded consumable food suggests that its burning was deliberate. The intentional destruction of plant food at Upper Saratown (represented in features 52 and 170) has recently been interpreted as a

form of renewal ceremonialism (VanDerwarker et al. 2005). Such renewal could represent a simple "spring cleaning" in which storage pits are cleaned of sour foods, or they might be connected to mourning ceremonies in which the intentional destruction of household items is linked with ritual purification (*sensu* VanDerwarker et al. 2005).

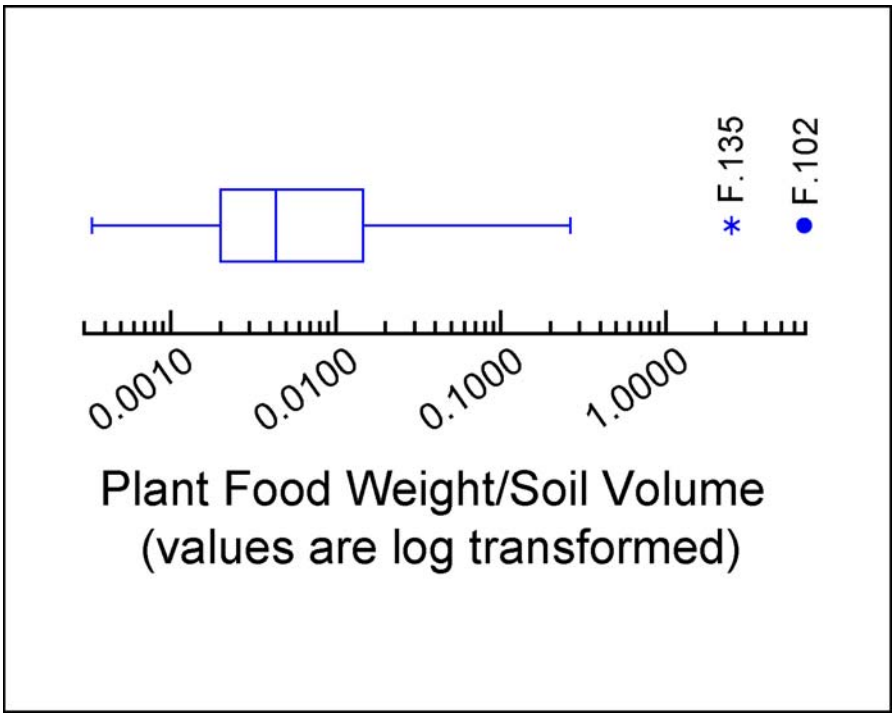

Figure 1. Box plot of plant food weight standardized by total soil volume for all features. Outliers are labeled.

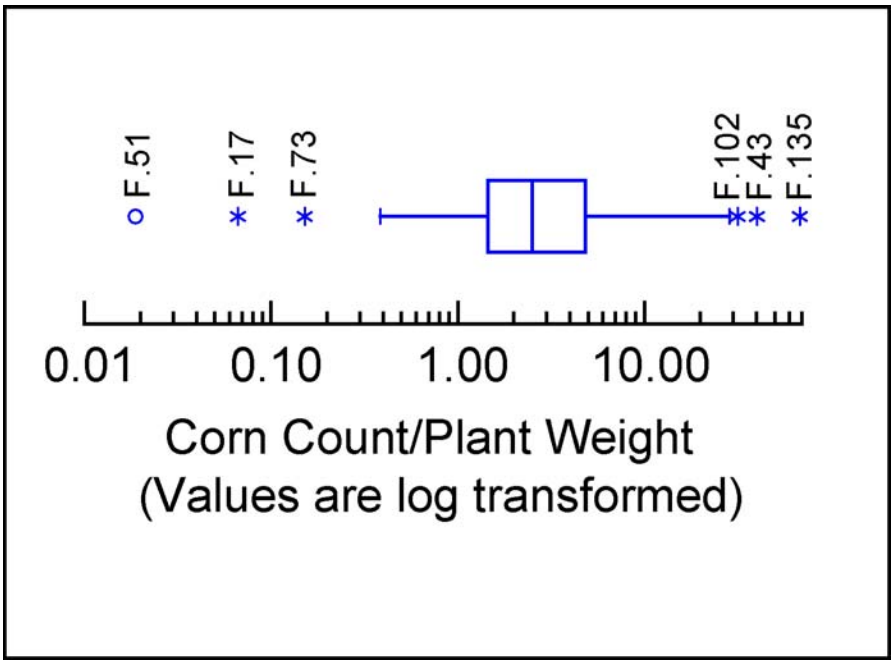

Figure 2. Box plot of corn (Zea mays) counts standardized by total plant weight for all features with corn. Outliers are labeled.

A box plot of corn counts standardized to plant weight also plots features 102 and 135 as high outliers, confirming that these features yielded significantly more corn than other features (Figure 2). Interestingly, feature 43 also plots as a high outlier, indicating significant amounts of corn present in this feature as well. Upon closer inspection, it is nevertheless clear that feature 43 is a bit different than features 102 and 135. Whereas features 102 and 135 yielded primarily corn *kernels*, feature 43 yielded only corn *cupules*. Unlike corn kernels, corn cupules are an inedible by-product of shelling corn. Thus, the presence of so many corn cupules in feature 43 indicates its disposal function for refuse deriving from corn processing activities. In addition to high outliers, Figure 2 also plots three low outliers—features that yielded much less corn than those in the distribution (features 17, 51, and 73). These three features are characterized almost entirely by carbonized wood.

The distributions of acorn and hickory were also plotted with respect to the Buzzard Rock features (Figures 3, 4). Features 13, 71, 91, and 156 were all high outliers in the graph plotting acorn counts standardized to plant weight. The most notable is feature 13, which has a value more than six times its nearest neighboring outlier. In addition to yielding large quantities of acorn shell, feature 13 also yielded an array of other taxa, including amaranth, bearsfoot, bedstraw, bulrush, chenopod, copperleaf, doveweed, and grape, as well as corn, hickory, and walnut. While features 71 and 156 yielded few taxa besides acorn, feature 91 produced a diverse array of plants similar to feature 13. The distribution of features with hickory produced four outliers—features 84, 92, 93, and 153B (Figure 4). These outlying features are dominated almost entirely by hickory, with few other taxa present.

These box plots collectively reveal that certain features represent virtually exclusive dumping zones for different types of plant food refuse, specifically corn, acorn, and hickory. While these exclusive dumping episodes may reflect a broader pattern of people processing different foods in discrete areas, it is more likely tied to seasonal disposal and differences in processing techniques. The carbonized corn kernels from features 102 and 135 do not represent processing debris, but rather already shelled consumables. I suggested above that these corn kernels might be the result of cleaning out old food stores. If this were the case, then purging the old corn would probably take place sometime in the spring or early summer; since corn is harvested in the late summer/early fall, stored corn would probably see the community through the winter. Moreover, if cleaning out storage facilities was tied to some form of renewal ritual (e.g., the Busk ceremony), such rituals usually occur prior to/around the time of the first annual harvest in late summer/early fall.

Unlike the corn kernels, the hickory and acorn fragments primarily represent processing debris. The features that appeared as high outliers in both the acorn and hickory box plots yielded mostly nutshells (inedible by-products) as opposed to nutmeats (consumable portions). In addition, acorns and hickories are processed differently. Acorns are extracted from their shells and parched, or extracted from their shells and boiled with an alkaline substance, after which they are dried and pounded. Processed acorn meats become flour. Hickories, however, are pounded and then boiled, shell and all. The water (or hickory milk/oil) is then decanted. Processed hickory meats become broth. Given that acorn and hickory processing might require a different set of tools, it is not unreasonable to suggest that they might be processed at different times and then their shells disposed of separately. In addition, acorns ripen approximately a month before hickories, and community members probably scheduled their nut processing activities accordingly.

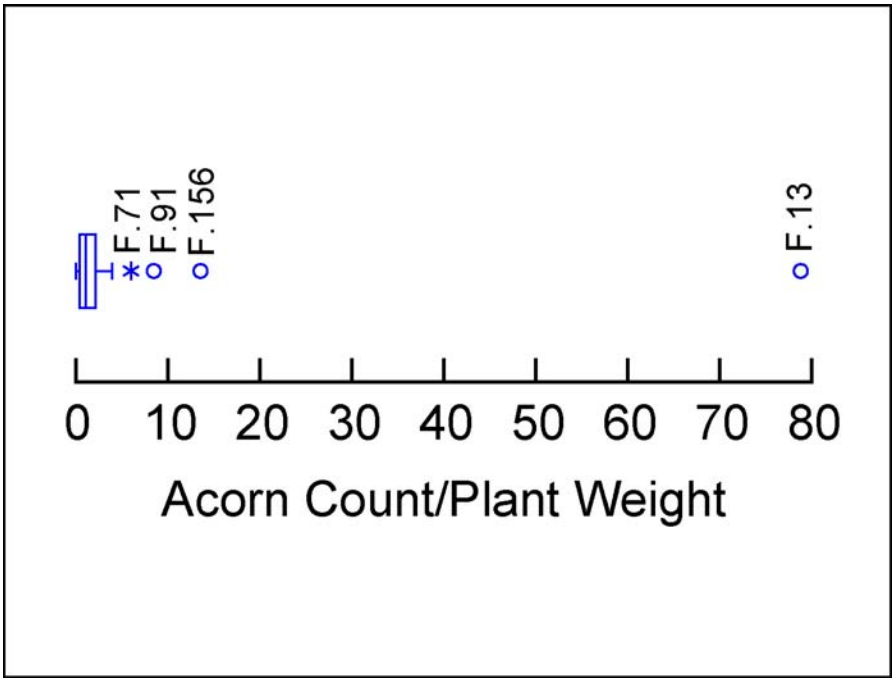

Figure 3. Box plot of acorn (Quercus sp.) counts standardized by total plant weight for all features with acorn. Outliers are labeled.

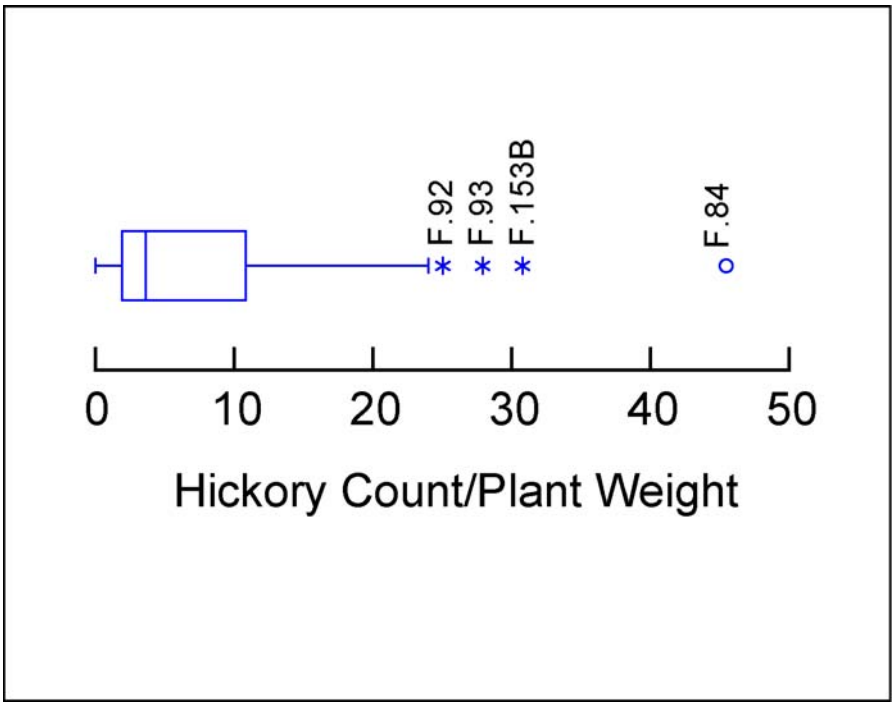

Figure 4. Box plot of hickory (Carya sp.) counts standardized by total plant weight for all features with hickory. Outliers are labeled.

Summary of Plant Patterns

Overall, the plant assemblage from the Buzzard Rock site is dominated by corn and hickory, although a variety of fruits and weedy seeds were also identified. Both domesticated (corn, bean, peach, and sumpweed) and wild taxa are represented, suggesting a combined farming/gardening/foraging strategy. Corn was probably cultivated in prepared fields, and beans may have been intercropped with the corn or grown in small home garden plots. Other fruits like grape, hawthorn, and persimmon, along with the various nuts and seeds identified in the assemblage, were probably collected as part of regular foraging rounds. Finally, analysis of the flotation samples was able to highlight certain special function features, specifically features 102 and 135. The sheer amount of carbonized corn kernels in these features, as well as the fact that few other taxa were identified in these features, suggests that the corn in these features represents storage. Whether the features in which they were found represent storage facilities is another issue altogether. These features might simply be pits used for burning and disposing of old stores (e.g., feature 102 with the oxidized soil), or they may represent simple trash pits. Either way, people at Buzzard Rock appear to have intentionally burned approximately 160,000 corn kernels and disposed of them in two discrete features. Such intentional destruction of foodstuffs may have taken place within the context of renewal ceremonialism.

The Zooarchaeological Assemblage

Recovery and Preservation Bias

The interpretation of zooarchaeological data depends upon the careful consideration of preservational biases affecting bone assemblages. As with any archaeological assemblage, what is recovered and studied by archaeologists does not directly represent what was originally discarded and deposited by humans. As with carbonized plant remains, whether or not a bone survives deposition to be recovered archaeologically depends in part on its structural density (Binford and Bertram 1977; Brain 1969; Voohries 1969; Lyman 1993; 1994). Denser, compact bones with more cortical tissue are more likely to survive than are fragile bones with more cancellous tissue. Thus, long bone diaphyses will be more resilient than epiphyses, skull fragments more than vertebral fragments, large mammal bones more than small mammal bones, and mammal bones more than bird bones, etc. Thus, generally speaking, we can expect a bias towards the preservation of larger mammalian remains relative to that of smaller, non-mammalian remains. In addition to preservation bias, we also must consider the affects of size bias in recovery techniques. Most field projects use standard ¼-inch mesh screens for recovering animal bones[3]—while this mesh size recovers a significant amount of bone from the surrounding dirt matrix, skeletal elements from smaller animals (e.g., fish vertebrae and ribs) will often fall through ¼ inch mesh.

Methods of Quantification

Most zooarchaeologists calculate a standard set of summary measures that form the basis for further analysis. The most basic statistic is the Number of Identified Specimens (NISP). NISP is the count of identified specimens per animal taxon (Grayson 1984). While NISP is relatively easy to calculate, there are disadvantages to using it as an estimate for the relative abundance of different animal taxa in an assemblage. Different taxa vary in the number of elements that compose their skeletons, and NISP is unable to control for this (Grayson 1979,1984; Reitz and Wing 1999). Another problem with NISP is that it does not account for differential preservation or bone fragmentation (Grayson 1984; Klein and Cruz-Uribe 1984; Reitz and Wing 1999). Clearly the bones of a white-tailed deer have more surface area than those of a cottontail and are thus likely to fragment into more pieces, significantly inflating the NISP of deer relative to cottontail. Thus, NISP may overestimate the contribution of larger animals relative to smaller animals.

MNI (Minimum Number of Individuals) is a secondary measure based in part on NISP. MNI is estimated for each species by calculating the occurrence of the most abundant element of the animal, while accounting for the side of the element (if applicable), portion represented, and relevant age information (Grayson 1984; Reitz and Wing 1999). For example, if the most abundant element of a white-tailed deer is the proximal end of a femur (n=12), and eight come from the right side of the animal and four from the left site, the minimum number of white-tailed deer would be eight. MNI has several advantages over NISP, the primary one being that it provides units that are independent of each other (Grayson 1973, 1984). While NISP does not account for the fact that different taxa are composed of varying numbers of skeletal elements, MNI is totally unaffected by this problem. Moreover, MNI is much less affected by the problems of fragmentation and preservation than NISP.

[3] The Buzzard Rock screened faunal assemblage was recovered using ¼-inch mesh screens.

As with NISP, however, there are also disadvantages to using MNI, including the inflation of rarer species in the assemblage and the problem of aggregation (Grayson 1984; Reitz and Wing 1999). NISP and MNI can best be understood as separate ends of a spectrum in which NISP represents the maximum number of individuals identified in an assemblage. NISP overestimates the importance of larger, more common taxa. At the other end of the spectrum, MNI (through setting a minimum) has the opposite effect and overestimates rarer taxa. Moreover, MNI calculations can vary based on how the analyst aggregates the data. There are many ways that the data can be grouped and MNI values calculated—by site, feature, feature type, stratigraphic level, etc. For example, calculating MNI on a feature by feature basis would yield a larger total MNI for each taxon than simply calculating MNI for the site as a whole. In my analysis, I tabulate NISP and MNI for each feature.

Laboratory Procedures

Screened bone specimens were sorted to the lowest possible taxonomic category. Specimens were identified with reference to the zooarchaeological comparative collection at the UNC Research Laboratories of Archaeology, in addition to my personal collection. Identification of screened materials included the recording of provenience, animal class, genus and species, element, percentage and portion of the element represented, number of specimens, side of element (when applicable), basic observations regarding the age of the animal and extent of bone modification (whether natural or cultural), and weight (grams). Each specimen was first assigned to the appropriate animal class whenever possible (e.g., mammal, bird, etc.). The anatomical element was recorded when identified. When the element could not be identified, it was placed in an unidentified category.

Basic Results

This section presents the results of the identification of the animal bones from screened contexts at the Buzzard Rock site. The data are summarized by NISP and weight for the site as a whole (Tables 5, 6) and by NISP, MNI, and weight for each feature (Appendix B). Counts and percentages are provided for each taxon (Table 5) and animal class designation (e.g., mammals, birds; see Table 6). Unfortunately, the limited sample size of the faunal assemblage from Buzzard Rock prohibits a thorough quantitative analysis.

The Buzzard Rock screened faunal assemblage yielded a total of 1,846 bone specimens weighing 574 grams. Ten animal taxa were identified, in addition to unidentified fish, turtle, bird, and mammal specimens. A single molar from a human (*Homo sapiens*) was also identified. The only fish remains encountered remain unidentified (largely due to a lack of adequate comparative specimens) with the exception of a single specimen assigned to the Pimelodidae (catfish) family. Reptiles identified in the assemblage consist of unidentified turtle and unidentified snake specimens. No amphibians were identified in the assemblage.

Few bird specimens were encountered, and those that were identified as bird were mostly non-diagnostic long bone shaft fragments. There were a few specimens, however, that were identified beyond an unidentified bird category—these include two specimens assigned to the owl order (Strigiformes) and 13 turkey bones (*Meleagris gallopavo*). Turkeys are terrestrial birds that prefer grassy fields and woodlands with thick understories (Benyus 1989; Sutton and Sutton 1985). Interestingly, the owl specimens were recovered from feature 13, the same feature with the large deposit of acorn shells.

The majority of animal bones that could be identified were classified as mammals. One possible opossum (*Didelphis virginianus* cf.) specimen was identified, but the identification is uncertain. Three squirrel (*Scuirus* sp.) specimens were also identified; squirrels prefer forests, forest edges, and secondary growth (Reid 1997:183–186). Two cottontail (*Sylvilagus* sp.) specimens were identified and probably represent eastern cottontail (*Sylvilagus floridanus*), which tends to inhabit forest edges and areas of secondary growth, and is known to be an agricultural pest (Benyus 1989; Sutton and Sutton 1985). Dog (*Canis familiaris*) remains were encountered in feature 73 and were represented entirely by skull and tooth fragments. Domestic dogs probably lived on site, where they scavenged for food and provided warning to the sites' inhabitants. The inclusion of dog remains in ordinary domestic refuse at the Buzzard Rock site suggests that dogs may have been a food resource as well. However, the fact that the dog specimens had no evidence of burning/butchering and that they were restricted to a single feature might suggest intentional burial. Beaver (*Castor canadensis*) represents the only aquatic mammal identified in the Buzzard Rock assemblage. Beavers can be found in/near a variety of water bodies, including lakes/ponds, rivers/streams, and marshes. White-tailed deer (*Odocoileus virginianus*) was also identified. Deer inhabit a variety of different ecozones, including forests, forest edges, grasslands, disturbed areas, and occasionally agricultural fields (Benyus 1989; Sutton and Sutton 1985). Finally, four cow (*Bos taurus*) specimens (represented by tooth fragments) were identified in Feature 16.

Overall, mammals dominate the assemblage in terms of both NISP and bone weight (Table 6). Fish, reptiles, and birds were less represented in the assemblage, probably a factor of size bias in the screening methods and differential preservation. Generally, the animals identified in the assemblage inhabit three major habitat zones: aquatic, forested, and secondary/domestic (e.g., near human habitations/agricultural fields). People probably used a variety of techniques for procuring animals, including traps and snares in forests, gardens, agricultural fields; more direct hunting methods (e.g., stalking prey) for deer and turkeys; and line and net fishing for fish and turtles. Traps, snares, and nets could have been set in the course of gathering wild plant foods and tending to gardens and agricultural fields. More direct hunting methods, however, would have required more focused attention, and thus would have probably required scheduling around other tasks.

Table 5. Summary of animal taxa for Buzzard Rock (44RN2).

Common Name	*Taxonomic Name*	NISP	Wt (g)
FISH			
Catfish Family	Pimelodidae (family)	2	0.05
UID Fish		92	2.16
REPTILES			
UID Snake		2	0.12
UID Turtle		62	12.85
BIRDS			
Wild Turkey	*Meleagris gallopavo*	13	32.21
UID Owl	Strigiformes (order)	2	0.12
UID Bird		58	9.88
MAMMALS			
Opossum cf.	*Didelphis virginianus* cf.	1	0.45
Human	*Homo sapiens sapiens*	1	0.4
Squirrel	*Scuirus* sp.	3	0.68
UID Rodent	Rodentia (order)	1	0.02
Cottontail	*Sylvilagus* sp.	2	1.5
Dog	*Canis familiaris*	31	28.41
Beaver	*Castor canadensis*	1	0.86
White-tailed deer	*Odocoileus virginianus*	73	169.2
Cow	*Bos taurus*	4	0.23
UID Mammal		1498	270.55
UNIDENTIFIED		--	44.06
TOTAL		1846	573.75

Table 6. Animal Class Statistics for the Buzzard Rock faunal assemblage.

	NISP	%NISP	Weight (g)	%Weight
FISH	94	5.1%	2.21	0.4%
REPTILES	64	3.5%	12.97	2.4%
BIRDS	73	4.0%	42.21	8.0%
MAMMALS	1615	87.5%	472.3	89.2%

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Appendix A. Buzzard Rock (44RN2) plant taxa from flotation samples listed by feature and unit.

	Feature 1		Feature 3		Feature 7		Feature 8		Feature 10		Feature 13	
N of Samples	1		2		5		1		4		16	
Total Volume (liters)	15		30		75		15		60		240	
Plant Weight (grams)	0.57		1.72		15.88		0.30		2.90		25.70	
Wood Weight (grams)	0.50		1.60		15.24		0.24		2.30		21.47	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	2	0.00	4	0.02	5	0.00			8	0.03	6	0.00
Corn cupule cf.												
Corn kernel	2	0.00	2	0.01	24	0.38			3	0.01	33	0.09
Corn kernel cf.												
Bean									2	0.00	4	0.04
NUTS												
Acorn shell			2	0.01					3	0.00	2019	3.06
Acorn shell cf.									2	0.00	1	0.00
Acorn cap												
Acorn meat											7	0.05
Acorn meat cf.	2	0.01										
Hickory shell	8	0.06	2	0.08	275	3.07	3	0.02	37	0.39	99	0.86
Hickory shell cf.					1	0.01						
Hickory husk												
Hickory meat					1	0.01						
Hickory meat cf.					7	0.14						
Walnut shell					21	1.06	2	0.04	1	0.17	1	0.01
Walnut family cf.												
FRUITS												
Grape					1	0.02					10	0.03
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth											1	
Bean family												
Bean/Persimmon											2	
Bearsfoot					2		1		7		7	
Bearsfoot cf.												
Bedstraw	1				2				1		3	
Bullgrass cf.												
Bulrush											1	
Cheno/am									2		1	
Chenopod					3		4				3	
Copperleaf					1						3	
Doveweed											1	
Euphorbia family											1	
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.					1							
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed					1				2		10	
UNIDENTIFIED					45	0.17					28	0.06

	Feature 17		Feature 20		Feature 27		Feature 29		Feature 31		Feature 32	
N of Samples	13		4		4		1		2		1	
Total Volume (liters)	195		60		60		15		30		15	
Plant Weight (grams)	210.60		3.60		7.37		3.03		41.45		2.14	
Wood Weight (grams)	210.28		3.47		5.09		2.07		41.05		1.63	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	7	0.05	1	0.00	2	0.01	4	0.00	2	0.00	2	0.00
Corn cupule cf.												
Corn kernel	7	0.05	8	0.09	1	0.00	7	0.13	17	0.15	2	0.00
Corn kernel cf.												
Bean												
NUTS												
Acorn shell	5	0.01			2	0.00			7	0.00	1	0.00
Acorn shell cf.	1	0.00										
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	35	0.21	9	0.04	156	2.27	68	0.80	18	0.22	34	0.51
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell							2	0.03				
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth	1											
Bean family												
Bean/Persimmon												
Bearsfoot			15									
Bearsfoot cf.												
Bedstraw	2		1									
Bullgrass cf.												
Bulrush												
Cheno/am	5		4									
Chenopod	3		1								4	
Copperleaf	4								1			
Doveweed												
Euphorbia family												
Grass family	1											
Holly					1							
Knotweed	1											
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.	2											
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed	5		1		1							
UNIDENTIFIED	6	0.00	3	0.00					1	0.00	1	0.00

	Feature 33		Feature 34		Feature 37		Feature 40		Feature 41		Feature 42	
N of Samples	1		1		2		1		1		1	
Total Volume (liters)	15		15		30		15		15		15	
Plant Weight (grams)	1.24		2.15		3.86		0.55		1.18		2.93	
Wood Weight (grams)	0.89		2.05		2.25		0.52		0.94		2.13	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	5	0.00			11	0.02			1	0.01	2	0.00
Corn cupule cf.												
Corn kernel	1	0.00			111	1.45	1	0.00	1	0.01	3	0.00
Corn kernel cf.												
Bean												
NUTS												
Acorn shell												
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	20	0.33	8	0.10	12	0.14	2	0.03	22	0.22	40	0.67
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell											3	0.11
Walnut family cf.												
FRUITS												
Grape					1						1	
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.											1	0.02

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot							4					
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod												
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory			1									
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed			1									
UNIDENTIFIED	5	0.02										

	Feature 43		Feature 46A		Feature 48		Feature 49		Feature 50		Feature 51	
N of Samples	2		1		1		1		1		4	
Total Volume (liters)	30		15		15		15		15		60	
Plant Weight (grams)	7.12		0.84		2.16		0.45		1.24		479.95	
Wood Weight (grams)	4.08		0.77		2.02		0.35		1.22		479.73	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	286	2.15							1	0.00	9	0.04
Corn cupule cf.												
Corn kernel									1	0.00		
Corn kernel cf.												
Bean												
NUTS												
Acorn shell			1	0.00	1	0.01						
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	37	0.74	7	0.07	11	0.12	10	0.10	2	0.02	9	0.18
Hickory shell cf.												
Hickory husk	2	0.15										
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot	1											
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod	1										9	
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed	1											
UNIDENTIFIED					1	0.01						

	Feature 53		Feature 54A		Feature 56		Feature 58		Feature 60		Feature 61	
N of Samples	2		3		5		1		2		2	
Total Volume (liters)	30		45		75		15		30		30	
Plant Weight (grams)	0.51		2.93		387.77		0.17		1.19		6.41	
Wood Weight (grams)	0.49		2.71		387.61		0.16		1.16		4.90	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule			4	0.06			1	0.00				
Corn cupule cf.												
Corn kernel	1	0.00	3	0.02			1	0.00				
Corn kernel cf.												
Bean												
NUTS												
Acorn shell	1	0.00										
Acorn shell cf.												
Acorn cap			1	0.00								
Acorn meat												
Acorn meat cf.												
Hickory shell	3	0.02	14	0.11	8	0.11	2	0.01	1	0.00	96	1.51
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell			1	0.03								
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon					1	0.02						
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw					2							
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod					1							
Copperleaf			2									
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed			1									
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed			1									
UNIDENTIFIED	3	0.00	1	0.00								

	Feature 62		Feature 63		Feature 66		Feature 67		Feature 68		Feature 71	
N of Samples	1		1		1		1		1		2	
Total Volume (liters)	15		15		15		15		15		30	
Plant Weight (grams)	0.45		0.82		0.52		0.45		0.97		2.66	
Wood Weight (grams)	0.44		0.82		0.49		0.45		0.95		2.58	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule			1	0.00								
Corn cupule cf.												
Corn kernel					4	0.01					2	0.00
Corn kernel cf.									1	0.00		
Bean												
NUTS												
Acorn shell											16	0.06
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	1	0.00	1	0.00	3	0.02			3	0.02	7	0.02
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape	1	0.01										
Hawthorn												
Hawthorn cf.												
Peach											1	0.00
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod												
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed					1							
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed					1						2	
UNIDENTIFIED												

	Feature 72		Feature 73		Feature 75		Feature 78		Feature 81		Feature 84	
N of Samples	1		1		1		1		1		2	
Total Volume (liters)	15		15		15		15		15		30	
Plant Weight (grams)	0.16		6.61		1.47		1.05		0.7		4.29	
Wood Weight (grams)	0.16		6.57		1.44		1.03		0.66		1.96	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule							1	0.00	4	0.03		
Corn cupule cf.					1	0.00						
Corn kernel	1	0.00	1	0.00	3	0.03	2	0.00			4	0.02
Corn kernel cf.												
Bean												
NUTS												
Acorn shell							3	0.00				
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell			4	0.04			3	0.02	2	0.01	195	2.17
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell											2	0.13
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth			1									
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod					1						1	
Copperleaf							1					
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed											1	0.00
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed												
UNIDENTIFIED											2	0.01

	Feature 87		Feature 87D		Feature 88		Feature 89		Feature 90		Feature 91	
N of Samples	3		1		1		1		1		7	
Total Volume (liters)	45		15		15		15		15		105	
Plant Weight (grams)	2.55		0.97		4.03		0.65		1.99		131.84	
Wood Weight (grams)	2.51		0.86		4.00		0.62		1.64		121.47	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	2	0.00	2	0.00	1	0.00					163	0.85
Corn cupule cf.												
Corn kernel	3	0.00	10	0.11	6	0.03	1	0.02	1	0.01	177	1.24
Corn kernel cf.												
Bean											4	0.05
NUTS												
Acorn shell	2	0.00									1113	3.18
Acorn shell cf.												
Acorn cap												
Acorn meat											6	0.38
Acorn meat cf.												
Hickory shell	9	0.04					3	0.01	16	0.34	82	0.81
Hickory shell cf.												
Hickory husk											1	0.00
Hickory meat												
Hickory meat cf.												
Walnut shell											7	0.43
Walnut family cf.												
FRUITS												
Grape	1	0.00										
Hawthorn											6	0.02
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family											1	0.00
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw	1										2	
Bullgrass cf.												
Bulrush	1											
Cheno/am											1	
Chenopod											1	
Copperleaf												
Doveweed												
Euphorbia family												
Grass family											1	
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed	1						1				2	
UNIDENTIFIED									1	0.00	96	0.40

	Feature 92		Feature 93		Feature 94A		Feature 95		Feature 97B		Feature 98	
N of Samples	1		2		1		3		1		8	
Total Volume (liters)	15		30		15		45		15		120	
Plant Weight (grams)	8.47		3.80		2.07		6.25		10.37		120.74	
Wood Weight (grams)	4.52		2.69		2.03		3.89		10.35		116.54	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	4	0.00	7	0.03	1	0.00	10	0.02			25	0.08
Corn cupule cf.												
Corn kernel	1	0.00	4	0.02	1	0.04	11	0.06	4	0.02	282	2.51
Corn kernel cf.											1	0.00
Bean												
NUTS												
Acorn shell											191	0.58
Acorn shell cf.												
Acorn cap												
Acorn meat											1	0.01
Acorn meat cf.											1	0.01
Hickory shell	212	3.87	106	1.05			150	2.28	1	0.00	48	0.46
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.											1	0.02
Walnut shell			1	0.01			1	0.00			8	0.26
Walnut family cf.												
FRUITS												
Grape	1	0.00										
Hawthorn											3	0.00
Hawthorn cf.												
Peach												
Persimmon											12	0.17
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw							1				1	
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod	2										1	
Copperleaf												
Doveweed												
Euphorbia family												
Grass family											3	
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed											3	
Sumpweed cf.											1	
Tick clover												
Wild bean							1	0.00				
Unidentified seed			1								1	
UNIDENTIFIED	13	0.08	1	0.00			3	0.00	1	0.00	4	0.01

	Feature 98A		Feature 100		Feature 101		Feature 102		Feature 103		Feature 106A	
N of Samples	2		1		1		21		1		1	
Total Volume (liters)	30		15		15		315		15		15	
Plant Weight (grams)	1.02		0.52		2.64		2189.40		3.02		0.91	
Wood Weight (grams)	1.01		0.49		2.49		27.52		2.56		0.88	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob							3	0.76				
Corn cupule	2	0.00					13	0.23				
Corn cupule cf.												
Corn kernel	2	0.00			2	0.00	87736	2160.16	53	0.40	2	0.02
Corn kernel cf.												
Bean							2	0.05				
NUTS												
Acorn shell	2	0.00					2	0.00	2	0.01		
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	3	0.01			10	0.15	10	0.03	7	0.04	2	0.01
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell			1	0.03								
Walnut family cf.												
FRUITS												
Grape							5	0.00	1	0.00		
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot			6									
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod							4					
Copperleaf												
Doveweed												
Euphorbia family												
Grass family					1							
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane					1							
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover									1	0.00		
Wild bean												
Unidentified seed			1		1						2	
UNIDENTIFIED							1	0.65				

	Feature 108		Feature 109		Feature 110		Feature 111A		Feature 111B		Feature 112	
N of Samples	1		1		2		2		1		2	
Total Volume (liters)	15		15		30		30		15		30	
Plant Weight (grams)	0.46		0.63		3.40		1.63		1.24		1.42	
Wood Weight (grams)	0.38		0.55		3.19		1.49		1.06		1.39	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule			2	0.00	2	0.01					2	0.01
Corn cupule cf.												
Corn kernel	2	0.00					13	0.07				
Corn kernel cf.												
Bean												
NUTS												
Acorn shell												
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	8	0.06	7	0.08	18	0.20	4	0.07	12	0.18	3	0.01
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.	2	0.02										
FRUITS												
Grape											3	0.01
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw			1									
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod			1		1							
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge											1	
Smartweed												
Sumpweed					1							
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed					3						4	
UNIDENTIFIED			1	0.00								

	Feature 113		Feature 114		Feature 115		Feature 116		Feature 117		Feature 118	
N of Samples	1		2		5		1		1		2	
Total Volume (liters)	15		30		75		15		15		30	
Plant Weight (grams)	0.57		1.18		4.25		0.32		0.38		1.86	
Wood Weight (grams)	0.57		1.02		3.90		0.31		0.29		1.82	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	1	0.00	2	0.00	1	0.00	2	0.01			2	0.00
Corn cupule cf.												
Corn kernel					17	0.19			2	0.00		
Corn kernel cf.												
Bean												
NUTS												
Acorn shell					1	0.00					2	0.00
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell			12	0.16	18	0.14	2	0.00	7	0.09	3	0.02
Hickory shell cf.	1	0.00										
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell					1	0.00						
Walnut family cf.												
FRUITS												
Grape					1	0.00			1	0.00		
Hawthorn												
Hawthorn cf.											1	0.00
Peach												
Persimmon					2	0.02						
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot											1	
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod												
Copperleaf	1											
Doveweed												
Euphorbia family												
Grass family			1									
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean											1	0.02
Unidentified seed					2							
UNIDENTIFIED											1	0.00

	Feature 120		Feature 121		Feature 122		Feature 124		Feature 126		Feature 128	
N of Samples	1		1		1		1		1		2	
Total Volume (liters)	15		15		15		15		15		30	
Plant Weight (grams)	0.63		0.57		0.67		0.85		1.26		6.30	
Wood Weight (grams)	0.62		0.54		0.66		0.85		1.20		6.07	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule							1	0.00			3	0.00
Corn cupule cf.												
Corn kernel	3	0.01			1	0.00			8	0.05	22	0.17
Corn kernel cf.												
Bean												
NUTS												
Acorn shell			1	0.00					3	0.00	1	0.00
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	1	0.00	6	0.03	2	0.01	2	0.00	2	0.01	9	0.06
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot			1									
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am									1		1	
Chenopod							7					
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed			1								1	
UNIDENTIFIED											1	0.00

	Feature 129		Feature 130		Feature 134		Feature 135		Feature 136		Feature 137	
N of Samples	1		2		1		30		1		1	
Total Volume (liters)	15		30		15		450		15		15	
Plant Weight (grams)	2.52		0.76		0.97		1129.55		0.97		0.17	
Wood Weight (grams)	2.51		0.75		0.97		5.51		0.97		0.13	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule							7	0.00			1	0.00
Corn cupule cf.												
Corn kernel	1	0.00					76846	1123.83	1	0.00	2	0.04
Corn kernel cf.												
Bean												
NUTS												
Acorn shell			3	0.00								
Acorn shell cf.							1	0.00				
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	5	0.01	2	0.00	1	0.00	20	0.16	1	0.00	1	0.00
Hickory shell cf.							3	0.02				
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape												
Hawthorn			1	0.01								
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth							4					
Bean family												
Bean/Persimmon												
Bearsfoot							1					
Bearsfoot cf.									2			
Bedstraw												
Bullgrass cf.												
Bulrush							1					
Cheno/am												
Chenopod							19					
Copperleaf							2					
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane							1					
Sage cf.												
Sedge												
Smartweed							1					
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed							4					
UNIDENTIFIED							19	0.09				

	Feature 139		Feature 140		Feature 141		Feature 142		Feature 143		Feature 145	
N of Samples	2		1		1		2		1		1	
Total Volume (liters)	30		15		15		30		15		15	
Plant Weight (grams)	1.77		0.19		0.41		4.90		1.29		1.60	
Wood Weight (grams)	1.66		0.19		0.40		4.79		1.29		1.57	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	2	0.00			2	0.01	1	0.00	2	0.00		
Corn cupule cf.												
Corn kernel	4	0.11	1	0.00	1	0.00	3	0.01			4	0.02
Corn kernel cf.												
Bean												
NUTS												
Acorn shell									1	0.00		
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell							14	0.10			3	0.01
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family					1							
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw	2											
Bullgrass cf.					1							
Bulrush												
Cheno/am												
Chenopod												
Copperleaf	1											
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.	1											
Knotweed family							2					
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed												
UNIDENTIFIED												

	Feature 146B		Feature 148		Feature 149		Feature 150		Feature 151		Feature 153A	
N of Samples	1		2		1		1		2		1	
Total Volume (liters)	15		30		15		15		30		15	
Plant Weight (grams)	1.05		4.92		0.56		0.44		3.76		1.30	
Wood Weight (grams)	1.02		3.70		0.43		0.43		3.67		1.28	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule	3	0.00	7	0.02	2	0.00	2	0.01	1	0.00	5	0.01
Corn cupule cf.												
Corn kernel			92	1.15	14	0.13			1	0.00		
Corn kernel cf.												
Bean												
NUTS												
Acorn shell												
Acorn shell cf.												
Acorn cap												
Acorn meat												
Acorn meat cf.												
Hickory shell	2	0.03	7	0.05			1	0.00	7	0.09	4	0.01
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell			1	0.00								
Walnut family cf.												
FRUITS												
Grape									1	0.00		
Hawthorn												
Hawthorn cf.												
Peach												
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw	1											
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod	1		2				1					
Copperleaf												
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed							1		1			
UNIDENTIFIED	1	0.00										

	Feature 153B		Feature 154		Feature 155		Feature 156		Feature 156C		Feature 157	
N of Samples	1		1		1		1		2		1	
Total Volume (liters)	15		15		15		15		30		15	
Plant Weight (grams)	0.39		0.76		0.33		1.99		5.73		3.07	
Wood Weight (grams)	0.22		0.70		0.33		1.13		5.57		2.50	
Count/Weight	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)	(n)	(g)
CROPS												
Corn cob												
Corn cupule			1	0.00	1	0.00	1	0.00			3	0.01
Corn cupule cf.												
Corn kernel			3	0.02			3	0.02	5	0.10	2	0.01
Corn kernel cf.												
Bean												
NUTS												
Acorn shell							16	0.09				
Acorn shell cf.												
Acorn cap												
Acorn meat							11	0.66				
Acorn meat cf.												
Hickory shell	12	0.17	6	0.03	3	0.00	6	0.05	7	0.06	36	0.55
Hickory shell cf.												
Hickory husk												
Hickory meat												
Hickory meat cf.												
Walnut shell												
Walnut family cf.												
FRUITS												
Grape												
Hawthorn												
Hawthorn cf.												
Peach							1	0.04				
Persimmon												
Persimmon cf.												

OTHER SEEDS												
Amaranth												
Bean family												
Bean/Persimmon												
Bearsfoot												
Bearsfoot cf.												
Bedstraw												
Bullgrass cf.												
Bulrush												
Cheno/am												
Chenopod												
Copperleaf							1					
Doveweed												
Euphorbia family												
Grass family												
Holly												
Knotweed												
Knotweed cf.												
Knotweed family												
Morninglory												
Morninglory cf.												
Purslane												
Sage cf.												
Sedge												
Smartweed												
Sumpweed												
Sumpweed cf.												
Tick clover												
Wild bean												
Unidentified seed	1						1					
UNIDENTIFIED			2	0.01								

	Unit 18, Level 6		Unit E501806	
N of Samples	1		1	
Total Volume (liters)	15		15	
Plant Weight (grams)	0.38		5.19	
Wood Weight (grams)	0.38		1.41	
Count/Weight	(n)	(g)	(n)	(g)
CROPS				
Corn cob				
Corn cupule				
Corn cupule cf.				
Corn kernel				
Corn kernel cf.				
Bean				
NUTS				
Acorn shell				
Acorn shell cf.				
Acorn cap				
Acorn meat				
Acorn meat cf.				
Hickory shell	8	0.16	243	3.76
Hickory shell cf.				
Hickory husk				
Hickory meat				
Hickory meat cf.				
Walnut shell				
Walnut family cf.				
Fruits				
Grape				
Hawthorn				
Hawthorn cf.				
Peach				
Persimmon				
Persimmon cf.				

OTHER SEEDS				
Amaranth				
Bean family				
Bean/Persimmon				
Bearsfoot				
Bearsfoot cf.				
Bedstraw				
Bullgrass cf.				
Bulrush				
Cheno/am				
Chenopod				
Copperleaf				
Doveweed				
Euphorbia family				
Grass family				
Holly				
Knotweed				
Knotweed cf.				
Knotweed family				
Morninglory				
Morninglory cf.				
Purslane				
Sage cf.				
Sedge				
Smartweed				
Sumpweed				
Sumpweed cf.				
Tick clover				
Wild bean				
Unidentified seed				
UNIDENTIFIED			7	0.02

Appendix B. Buzzard Rock (44RN2) animal taxa listed by feature and unit.

	Feature 7			Feature 13			Feature 15			Feature 16			Feature 20			Feature 24		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae	2		0.05															
UID Fish	86		2.07															
REPTILES																		
UID Snake																		
UID Turtle	33		7.15	13		2.5							1	1	0.13			
BIRDS																		
Wild Turkey	9	1	21.5															
UID Owl				2	1	0.12												
UID Bird	22		5.53	6		0.31												
MAMMALS																		
Opossum cf.	1		0.45															
Human																		
Squirrel																		
UID Rodent				1		0.02												
Cottontail	1	1	0.98	1	1	0.16												
Dog																		
Beaver													1	1	0.86			
White-tailed deer	5	1	53										23	1	12			
Cow										4	1	0.23						
UID Mammal	44		31.4	791		56.7	1		0.16				138		46.7	1		0.22
UNIDENTIFIED	--		6.92	--		9.27							--		5.15			

	Feature 25			Feature 27			Feature 29			Feature 32			Feature 33			Feature 42		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle																		
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer				7	1	0.84												
Cow																		
UID Mammal	9		2.32	48		2.74				5		0.59						
UNIDENTIFIED				--		1.83			0.86						0.22			0.11

	Feature 43			Feature 46			Feature 46B			Feature 50			Feature 53			Feature 54		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle				1		0.07												
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer																		
Cow																		
UID Mammal	1		0.17	6		1.91	3		0.5	11		1.52	38		5.13			
UNIDENTIFIED						0.3												0.07

	Feature 62			Feature 64			Feature 70			Feature 73			Feature 75			Feature 81		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle																		
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog										13	2	24.2						
Beaver																		
White-tailed deer																		
Cow																		
UID Mammal				2		1.28	1		0.45							1		0.36
UNIDENTIFIED			0.12									0.1			0.13			

	Feature 82			Feature 87			Feature 88			Feature 89			Feature 91			Feature 92		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish													0.03		0.03			
REPTILES																		
UID Snake																		
UID Turtle													4	1	1.64			
BIRDS																		
Wild Turkey													2	1	7.91			
UID Owl																		
UID Bird													23		3.19			
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel													2	2	0.52			
UID Rodent																		
Cottontail													1	1	0.52			
Dog																		
Beaver																		
White-tailed deer							1	1	4.09				17	1	73			
Cow																		
UID Mammal	8		5.06				1		1.19				97		29.8	--		7.21
UNIDENTIFIED						2.04						0.01			4.19			

	Feature 93			Feature 94A			Feature 95			Feature 96			Feature 97A			Feature 98		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																3		0.06
REPTILES																		
UID Snake																2		0.12
UID Turtle				1		0.15										1		0.02
BIRDS																		
Wild Turkey	1	1	0.76													1	1	2.01
UID Owl																		
UID Bird	5		0.71													1		0.07
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer																8	1	6.5
Cow																		
UID Mammal	12		2.72	2		0.57	1		0.03							62		9.99
UNIDENTIFIED				4		0.36						0.18	6		0.54			0.32

	Feature 98A			Feature 99			Feature 101			Feature 102			Feature 104			Feature 105		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle				1		0.16												
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer	3	1	3.43															
Cow																		
UID Mammal	9		6.57							8		0.32	3		0.55	1		0.11
UNIDENTIFIED	3		0.13						1.23	24		0.16	--		0.41			

	Feature 107			Feature 107A			Feature 108			Feature 110			Feature 111A			Feature 111B		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle																		
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird										1		0.07						
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer																1	1	0.41
Cow																		
UID Mammal				2		0.86	21		1.61				1		0.08	9		2.23
UNIDENTIFIED	--		0.11							1		0.1						

	Feature 115			Feature 126			Feature 127			Feature 128			Feature 132			Feature 134		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle				1		0.02	1		0.15									
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer							1	1	0.72	1	1	6.26	1	1	0.42			
Cow																		
UID Mammal							19		3.34	9		1.83	4		0.62	6		0.71
UNIDENTIFIED	--		1.98				--		5.22	1		0.32						

	Feature 135			Feature 136			Feature 139			Feature 145			Feature 146B			Feature 148		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle																1		0.26
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer																		
Cow																		
UID Mammal	5		2.15	12		2.88	4		0.92	4		0.33	3		0.33	8		0.93
UNIDENTIFIED	29		0.26															

	Feature 151			Feature 156			Feature 156A		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH									
Pimelodidae									
UID Fish									
REPTILES									
UID Snake									
UID Turtle									
BIRDS									
Wild Turkey									
UID Owl									
UID Bird									
MAMMALS									
Opossum cf.									
Human									
Squirrel									
UID Rodent									
Cottontail									
Dog									
Beaver									
White-tailed deer	1	1	1.19						
Cow									
UID Mammal				8		1.17	2		0.36
UNIDENTIFIED				1		0.09	--		0.09

	TU 18			TU 19			TU 20			TU 24			TU 25			TU 27		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle				2		0.15							1		0.13			
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human							1	1	0.4									
Squirrel																		
UID Rodent																		
Cottontail																		
Dog	18	1	4.19															
Beaver																		
White-tailed deer	3	1	5.39							1	1	1.98						
Cow																		
UID Mammal	37		5.52	1		0.32				20		1.83	6		0.64	2		0.6
UNIDENTIFIED							1		0.17				2		0.14			

	TU 29			TU 31			TU 34			TU 40			TU 47			TU 48		
	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)	NISP	MNI	Wt (g)
FISH																		
Pimelodidae																		
UID Fish																		
REPTILES																		
UID Snake																		
UID Turtle																		
BIRDS																		
Wild Turkey																		
UID Owl																		
UID Bird																		
MAMMALS																		
Opossum cf.																		
Human																		
Squirrel																		
UID Rodent																		
Cottontail																		
Dog																		
Beaver																		
White-tailed deer																		
Cow																		
UID Mammal				1		0.25	1		0.16				1		17.16	2		3.91
UNIDENTIFIED	3		0.11	--		0.48				1		0.18						