Archaeobotanical Analysis of the Bryan Site (46Oh65) in Ohio County, West Virginia

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Introduction

This chapter describes the archaeobotanical assemblage recovered from 39 soil samples taken from 30 contexts excavated during the Phase III mitigation at the Bryan site (46Oh65), occupied during the Late Prehistoric Monongahela Tradition (J. Vosvick, personal communication 2009).

The botanical information reported here provides an inventory of the botanical specimens recovered in the 39 soil samples and attempts to address questions about the site such as (1) what does the botanical assemblage tell us about subsistence activities that occurred at the site, (2) are there any indicators of seasonality or duration of stay, and (3) how do the results compare to botanical remains reported from other Monongahela and Fort Ancient sites in the area.

The site is located within the Appalachian Plateau physiographic province (WVDNR 1969) and supports a mixed mesophytic forest association, as described by Braun (1950). Tree species segregate into a mosaic of biologically diverse stands that include more than 20 different species but the stands predominantly consist of oak-hickory associations, interspersed with small stands of pine. An abundance of nut-bearing trees in conjunction with numerous other wild floral and faunal resources makes hardwood forests a bountiful exploitation zone. Wild plant foods would have included all nut species from the old-growth forests; hazelnuts and fleshy fruits/berries would have been available on bushes/shrubs in open and disturbed areas. Of course, the resource value of the forest lies not only in its food production potential but also in the many other plant resources it provided (e.g., wood for burning and construction, and fiber for containers and cloth), as well as the habitat it provided for wildlife (another important human food and materials resource).

As shown below, the Bryan Site flotation samples produced a robust botanical assemblage of predominantly wood charcoal, nutshell/nutmeat, maize, beans, and sumac, which is consistent with other Late Prehistoric assemblages for Monongahela and Fort Ancient groups in this area. In the following sections the methods and results of the analysis by plant category are presented first, followed by a discussion of the results that looks at how the paleobotanical data from 46Oh65 compare to other Late Prehistoric sites in the area.

Methods

During the Phase III site excavations, 39 soil samples were collected from 30 contexts by Archaeological Consultants of the Midwest, Inc. and the samples were submitted to K. Leone at Ohio Valley Archaeology, Inc. (OVAI) for flotation-processing and paleoethnobotanical analysis.

Flotation

All samples were processed in the OVAI Paleoethnobotany Laboratory. First the volume of each soil sample was measured and recorded. Then, the samples were floated one at a time using a Flote-Tech water flotation machine (Model A1). The Flote-Tech system consists of two, side-by-side tanks of water. One tank is a water reservoir and sediment-settling tank while the other is the agitation tank, where the soil sample is immersed in a metal container with a screened (1.0 mm) bottom. Water flows up through the screened container, agitating the soil sample and separating the carbonized material from the sediment. Air bubbles were added to increase the effectiveness of the agitation. Light materials, like carbonized seeds, nutshell, and wood, along with rootlets and some other unburned materials, are carried up and over the sluice of the agitation tank and into a fine mesh fabric (0.4 mm) at the top of the settling tank. Heavier materials in the flotation sample settle to the bottom of the screened container in the agitation tank while sand and silt filter down and out of the metal sample container, into the bottom of the agitation tank. This process requires little, if any, handling, which limits fragmentation of the carbonized material. Once the flotation process is complete, the heavy and light fractions that remain are removed from the machine and rinsed again before being set aside to air dry. The Flote-Tech machine is emptied and completely cleaned between the processing of samples from different sites to ensure there is no cross-contamination.

Analysis

Although the flotation process produces heavy and light fractions for each sample, counts and weights from the two fractions are combined during analysis. The different fractions are first sifted through a series of nested geologic sieves to organize particles by size. All non-botanical cultural material greater than 4 mm in size is returned to the principal investigator to be entered in the archaeological inventory. All charred botanical remains greater than 2 mm are then sorted into general plant categories such as wood, nutshell/nutmeat, seeds, corn, squash/gourd rind, and unidentified plant remains. Charred remains less than 2 mm in size are scanned for seeds. To avoid the under-representation of very fragile carbonized plant material in the plant assemblage, such as squash/gourd rind, acorn and hazelnut shell, these taxa (which break into pieces rarely larger than 2 mm in size) are identified down to 1 mm-size fragments. All plant residues less than 0.5 mm in size are not analyzed because this residue is smaller than complete seeds, and seed fragments of this size are too small to identify.

A Leica EZ4 binocular microscope with a 13X to 56X magnification range is used to sort and identify the macrobotanical assemblage. Weights are taken on an electronic top-loading Ohaus balance with an accuracy level to 0.001 g. Plant specimen frequencies are recorded using counts as well as weights. Weight-based data, alone, tend to be skewed because some plant species can be much denser, and thus heavier, than others.

Archaeobotanical materials are identified to the genus level when observable diagnostic markings necessary for a confident identification are present. Identification to the species level is made only when diagnostic markings are present on individual specimens or in cases where only one species is known to be native to the area. Plant fragments are placed in the 'unidentified' category when they are too small or too deteriorated to identify confidently. Unidentified material most often includes sap, congealed material, stems, and other unidentifiable plant parts, including seeds unknown to the analyst. Counts in all categories represent both complete specimens and fragments. For example, a complete maygrass seed and a partial seed are tabulated as two maygrass seeds. Resources consulted during analysis include various standard wood, nut, and seed identification manuals (e.g., Braun 1950; Britton and Brown 1936; Core *et al*. 1976; Davis 1993; Delorit 1970; Fernald 1950; Forest Service 1974; Harris 2003; Hoadley 1990; Martin and Barkley 1961; Muenscher 1955; Musil 1978; NC State University 2004; Panshin and de Zeeuw 1970; USDA 2008), as well as an extensive comparative collection of plant macroremains housed in the Ohio Valley Archaeology Paleoethnobotany Laboratory.

With each soil sample, an attempt is made to identify a selection of wood charcoal fragments to the species level. Twenty pieces of wood charcoal, greater than 2 mm in size, are randomly chosen from each sample. However, in samples with low counts or small fragments, every attempt is made to identify as many specimens as possible, up to 20 pieces, and this is noted in the Archaeobotanical Inventory (Appendix B). The wood species identifications are made through the examination of cell structure in each wood charcoal fragment, including observations on rays, resin canals, tyloses, and earlywood and latewood pore sizes and arrangement.

An underlying assumption of paleoethnobotanical analysis is that non-carbonized plant remains are modern, and as such they may be noted in the results but are not part of the final tallies, which only include carbonized remains. The carbonized plant material recovered through flotation is a small and inherently biased sample (due to differential conditions of deposition, preservation, and recovery) that, statistically speaking, only represents a small part of the total spectrum of plant taxa used at a site (Pearsall 2000: 66-76; Popper 1988). However, the recovered plant remains likely represent those most used at a site and burned as a result of spillage, intentional thermal activity, or general refuse burning.

In addition to sorting the remains by category and biological taxa, other analytical devices are also used. *Density* is a quantitative measure calculated as the count or weight of plant remains per liter of soil. Using this standard unit of measure makes it possible to compare between samples, contexts, or sites, regardless of varying soil sample sizes. *Ubiquity* is expressed as the percentage of sample contexts in which a plant category is found. As such, it is an indication of how the floral assemblage is distributed throughout the site (i.e., analyzed flotation samples). This is in contrast to density, which simply indicates abundance (Pearsall 2000:196).

Results

Table 1 summarizes the results of the archaeobotanical analysis of the 39 samples, which had a combined volume of 327 liters of soil. A total of 33,668 charred plant remains, weighing 346.3 grams, was recovered, yielding a plant density of 103 specimens, or 1.1 grams, per liter of sediment. Eight basic categories were identified, including (1) wood, (2) nutshell/nutmeat, (3) seeds, (4) corn, (5) squash rind, (6) berry flesh, (7) grass stems/nodules, and (8) unidentified plant material. The sections that follow present the results of the botanical analysis by category. General results from each *sample* (n=39) are recorded in the Archaeobotanical Summary of Samples (Appendix A), where differences between feature levels can be seen at a glance. Detailed results from each *context* (n=30) are tabulated in the Archaeobotanical Inventory (Appendix B).

Table 1. Archaeobotanical summary of the Bryan site (46Oh65).

Plant Class	Count (n)	Weight (g)	Density n/L	Density g/L	% of Plant Assemblage (n)	Ubiquity (n=30)
Wood	28,831	292.38	88.17	0.89	86%	100%
Nut	2,685	36.73	8.21	0.11	8%	97%
Seeds	539	1.73	1.65	0.01	2%	83%
Corn	1,490	14.77	4.56	0.05	4%	90%
Squash Rind	2	<.01	0.01	<.01	<1%	7%
Berry Flesh	1	0.04	<.01	<.01	<1%	3%
Grass Stems/Nodules	55	0.27	0.16	<.01	<1%	30%
Unidentified	65	0.42	0.20	<.01	<1%	53%
Total	**33,668**	**346.34**	**102.96**	**1.06**	**100%**	

Number of Contexts: 30
Number of Samples: 39
Total liters of soil: 327

Wood

Wood charcoal dominates (86%) the plant assemblage recovered from 46Oh65 (Table 1). A total of 28,831 fragments, weighing 292.4 grams, were recovered from the 30 analyzed contexts. Wood density is high at 88.2 specimens, or 0.9 grams, per liter of soil and wood charcoal is present in all contexts (100% ubiquity).

Table 2 summarizes the 21 wood taxa identified from the 39 analyzed samples (following Core *et al*. 1976; Hoadley 1990; NC State University 2004; and Panshin and de Zeeuw 1970). Identified taxa include: maple (*Acer* sp. n=141), honeylocust (*Gleditsia triacanthos* n=125), walnut (*Juglans* sp. n=93), oak (*Quercus* sp. n=87), elm/hackberry (Ulmaceae n=80), hickory (*Carya* sp. n=80), sassafras (*Sassafras* sp. n=33), sycamore (*Platanus occidentalis* n=24), beech (*Fagus grandifolia* n=19), persimmon (*Diospyros virginiana* n=17), basswood (*Tilia americana* n=8), sumac (*Rhus typhina* n=8), ash (*Fraxinus* sp. n=7), red mulberry (*Morus rubra* n=7), dogwood (*Cornus florida* n=5), Kentucky coffeetree (*Gymnocladus dioicus* n=3), hazelnut (*Corylus* sp. n=), buckeye (*Aesculus* sp. n=2), pine (*Pinus* sp. n=1), black cherry (*Prunus serotina* n=1), and grape vine (*Vitis* sp. n=1). Unidentifiable fragments (n=35) include bark and specimens too tiny for cell structure analysis. As described in the methods section above, 20

identifications were attempted from each of the 39 samples (except in samples that produced less than 20 wood fragments altogether). Of the 780 attempted identifications, 745 were successful while 35 ended in an unidentifiable result (mostly due to excessive fragmentation of the wood assemblage).

Table 2. Identified wood summary of the Bryan site (46Oh65).

	Count	Percentage of Identified Wood	Context Ubiquity
Maple	141	19%	73%
Honeylocust	125	17%	90%
Walnut	93	12%	77%
Oak*	87	12%	77%
Elm/Hackberry	80	11%	80%
Hickory	80	11%	73%
Sassafras	33	4%	30%
Sycamore	24	3%	43%
Beech	19	2%	37%
Persimmon	17	2%	37%
Basswood	8	1%	17%
Sumac	8	1%	17%
Ash	7	1%	20%
Red Mulberry	7	1%	17%
Dogwood	5	1%	7%
Kentucky Coffeetree	3	<1%	7%
Hazelnut	3	<1%	7%
Buckeye	2	<1%	3%
Pine	1	<1%	3%
Black Cherry	1	<1%	3%
Grape Vine	1	<1%	3%
TOTAL, identified	745	100%	

*All oak species combined.

Major contributors to the wood assemblage are maple (19%), honeylocust (17%), walnut (12%), oak (12%), elm/hackberry (11%), and hickory (11%) and they comprise 82% of the wood assemblage. The remaining 18% of the assemblage consists of 15 wood species, each representing 4% or less of all identified wood. The taxa identified are all consistent with the forest environment near the site and the ubiquity and distribution of such a wide variety of wood taxa at this site is likely indicative of availability rather than fuel choice, exclusively. Hardwoods, rather than softwoods or secondary growth species from disturbed habitats, are often the more valued fuel source when available, perhaps because of their smoke-curing properties or fuel efficiency (Asch and Asch 1985; Babrauskas 2005). So the fact that hardwoods (maple, walnut, oak, hickory) are not overly dominant in the assemblage suggests that hardwood stands were not directly adjacent to the site. Instead, the site probably was surrounded by stands rich with secondary growth species—as in areas where the forest had been or was regularly cleared.

The distribution of taxa among the 30 contexts can be described as fairly even; a mixture of taxa (5-16 species) is present in each context (Appendix B). However, there are three contexts dominated by just a few species of wood charcoal: (1) Feature 26 is comprised of wood only—

95% oak and 5% hickory—with no other plant remains, (2) Feature 37 is comprised of 95% walnut and 5% black cherry, and (3) Feature 46 is comprised of 85% honeylocust and 15% oak. Limited taxa present in a feature (when all other contexts contain a wide variety) might indicate that (1) a specialized activity took place in or near the feature, (2) the feature was open for a short period of time – perhaps a single thermal event is represented, or (3) the feature may be a tree root burned *in situ*. Four walnut specimens were recovered from Feature 65 that have uniform holes running through them, two down the center of cylindrical-shaped pieces (or twigs) and two others at odd angles in fragmented pieces. These holes could be signs of cultural drilling, or they could also be the remnants of insect burrowing.

The Archaeobotanical Summary (Appendix A) shows the quantities of plant remains in each level sampled from a context. All features that had two or more levels or sectors analyzed for plant remains show comparable wood species within their respective levels/sectors—even when wood density differs. This suggests that thermal activities are represented across multiple fill zones in single pits, and may imply that the same kinds of thermal activities (at least in terms of species utilized) were going on during the time that these features with multiple zones were open, for example, periodic dumping of hearth cleanings from a nearby house.

Figure 1 illustrates wood density calculations by context. Very high wood densities occur in Features 46, 56, and 65. The densities range from 1.8 to 2.4 grams per liter of soil (g/L). Another grouping of features that contain high (but not *very* high) densities include Features 14, 26, 93, 118, and the house floor, with a range from 1.0 – 1.6 g/L. The remaining features each have wood densities of less than 1.0 g/L. Together, high and very high density features account for 27% of the analyzed features, which is unusually high for most sites. This suggests that (1) features with larger amounts of charcoal were preferentially sampled over other, less-charcoal-rich features, (2) intense thermal activity took place in or near the high and very high density features but not the other sampled features, or (3) the high to very high density features were open for longer periods of time than the other sampled features and therefore received more day-to-day refuse that included a fair amount of hearth cleanings. These three possibilities each have very different implications for understanding the nature of the occupation at the Bryan Site. Possibility 1 indicates that there could be a noticeable level of sampling bias in the collection of the 39 soil samples, and implies that the analysis is not representative of the site as a whole—in other words, wood charcoal is over-represented in the sampled features when compared to all of the excavated features. Possibility 2 indicates that 8 of the 30 sampled contexts are located at or close to areas of intense thermal activity such as might be expected from domestic hearths, food processing areas (like smoking meat or parching nuts), etc. Possibility 3 has implications relevant to discussions of site occupation duration. Pit features that are left open and filled in over a longer period of time suggest a higher degree of site maintenance and site permanency, as does wide-spread, high wood charcoal density in pit features. Together, this indicates that the site was occupied for a longer period of time than typical of a resource extraction camp, suggesting that the site was a permanent residential base.

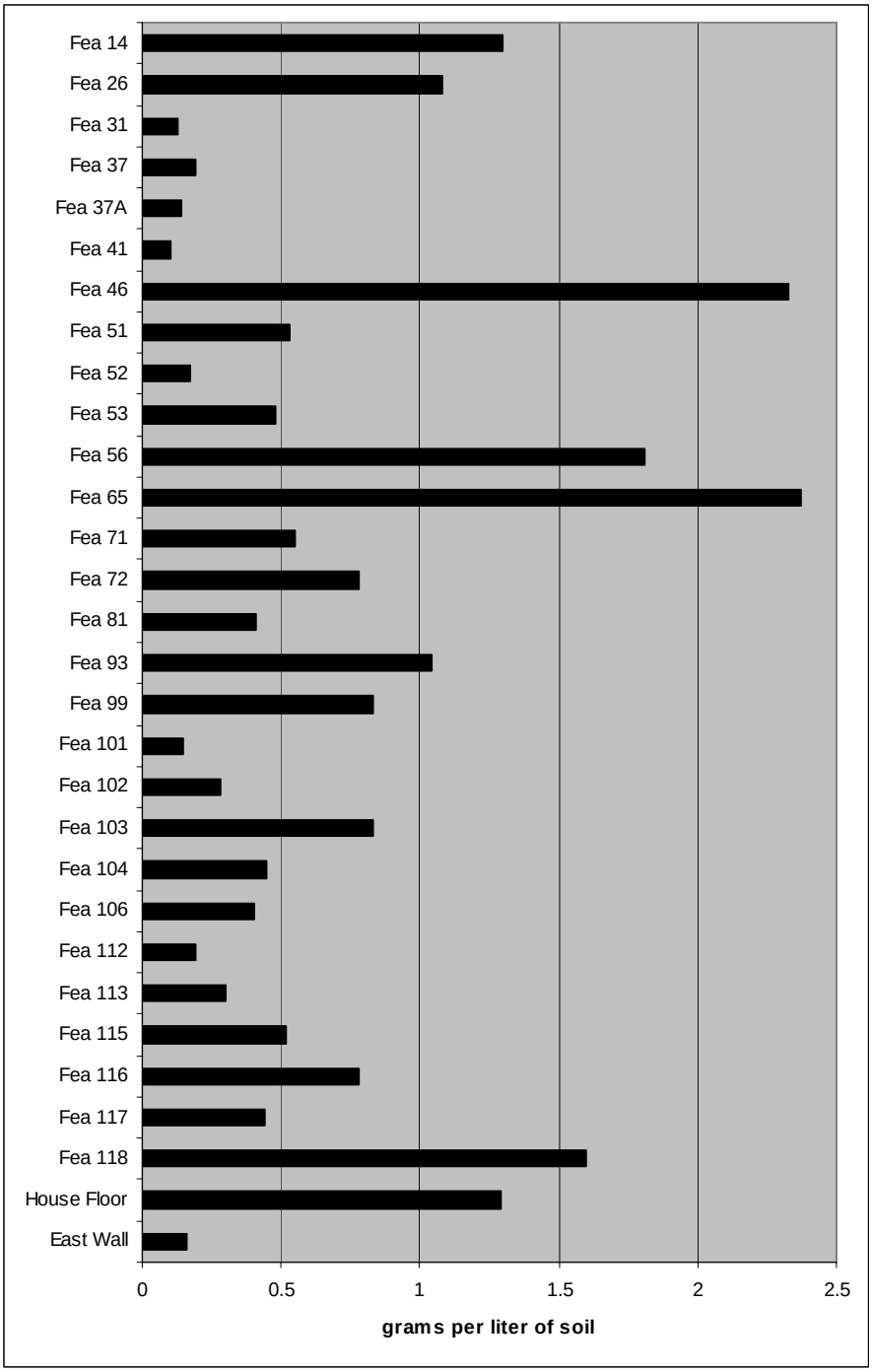

Figure 1. Wood density by context at the Bryan site (46Oh65).

Nutshell and Nutmeat

There were 2,660 fragments of nutshell and 25 pieces of nutmeat recovered from the site, with a combined weight of 36.73 grams (Table 1). Nut remains account for 8% of the entire floral assemblage. Nut density is low at 8.2 specimens, or 0.1 grams, per liter of soil; however, nut ubiquity is 97%, suggesting that nuts were commonly used by the site occupants.

Table 3 identifies the four nut taxa (based on carbonized nutshell) identified at the Bryan Site (Appendix B), including hickory (*Carya* sp. n=1,838), black walnut (*Juglans nigra* n=553), butternut (*Juglans cinerea* n=268), and hazelnut (*Corylus* sp. n=1). The nutmeat fragments could not be taxonomically classified with certainty. Hickory makes up the majority of the nutshell assemblage (68%) and was recovered from all contexts except one (97% ubiquity) – Feature 26 produced only wood charcoal. Black walnut and butternut are moderately represented (21% and 10% of the nut assemblage, respectively) yet were recovered from 83% and 80% of contexts, respectively. This may indicate that these trees were either not in close proximity to the site, as hickory may have been, or that these two taxa were a valued food and/or oil resource but were only used/available in low quantities. Hazelnut is minimally represented at 1% and was recovered only from Feature 99, which included the complete diversity of nut taxa mentioned above.

Table 3. Identified nutshell summary from the Bryan site (46Oh65).

	Count	**% of Nut Assemblage**	**Context Ubiquity**
Hickory	1,838	68%	97%
Black Walnut	553	21%	83%
Butternut	268	10%	80%
Hazelnut	1	<1%	3%
Nutmeat	25	1%	33%
TOTAL	2,685	100%	

All features in which two or more levels had flotation samples show comparable nut species recovered between levels, even when nut densities differ between levels (Archaeobotanical Summary-Appendix A). This suggests that the same kinds of nut-related activities are represented across multiple fill zones in single pits, and may imply that the same kinds of nut-related activities (at least in terms of species utilized) were going on during the time that these features with multiple zones were open.

Figure 2 illustrates nut density in each context. Nut density is highest in Feature 72 at 23.8 fragments per liter of soil (n/L). Another grouping of features that contain moderate densities include Features 14, 56, 71, 81, 117, 118, and the house floor, where densities range from 10.6 – 14 n/L. Nut harvesting/processing activity likely took place in or near all of the contexts just mentioned. Contexts that contain higher densities of both wood and nuts include Features 14, 56, 118, and the house floor.

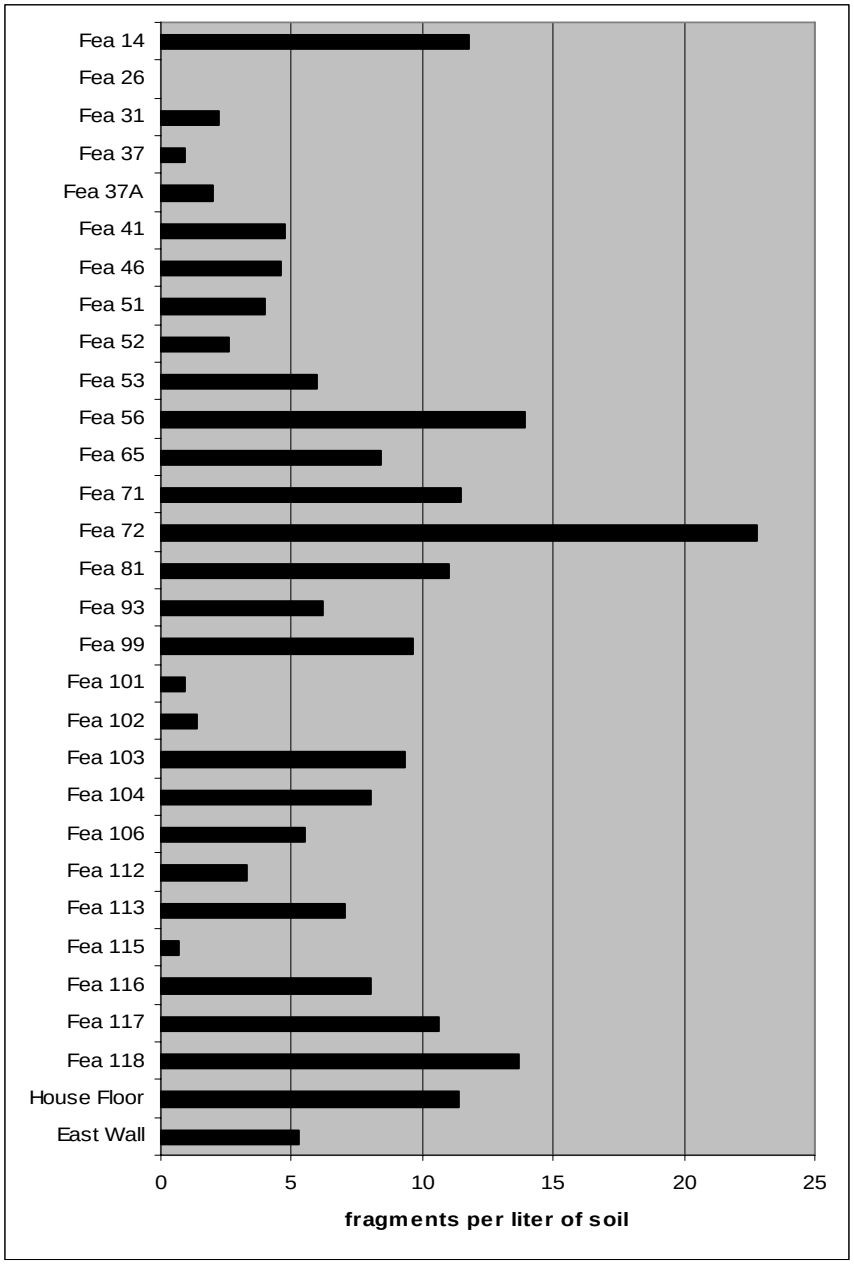

Figure 2. Nut density by context at the Bryan site (46Oh65).

Nuts and nutmeat would have been an important seasonal, and storable, food source for the occupants of 46Oh65. Nutmeat contains protein, fat, and carbohydrates as well as a compliment of vitamins and minerals (Goude 1996). The most commonly recorded ethnographic uses for nutmeats include eating them raw (except acorn), roasted, boiled, and boiled and mashed; they also are boiled for oil recovery and pulverized to use as flour (Gardner 1997; Harris 2003). If nuts are to be stored, they require parching (exposure to dry heat) to kill insects, mold, and fungi and to stop sprouting. Accidents during parching may be how some nutshell and nutmeat ends up charred in the archaeological assemblage. Charred nutshell also

may become part of the assemblage when discarded shell, a byproduct of nut processing/consumption, is used as fuel or burned as trash.

Hickory nuts, black walnuts, butternuts, and hazelnuts become ripe in September through October and there is about a four-week window in which to gather them before they disappear due to exploitation by other animals, insect infestation, mold, rot, or sprouting of roots (Britton and Brown 1936; Forest Service 1974). There is year-to-year and tree-to-tree variation in yield for all nut-bearing trees that is attributable to a combination of climate and genetic factors (Sork 1983). Despite much experimentation and some historic ethnographic records on nut mast exploitation, there are still many unknowns surrounding the prehistoric use of nuts—both the nutmeat and nutshell. Paleoethnobotanists can only speculate on prehistoric nut gathering, processing, and storage practices. Although we can calculate how much nutmeat is required to sustain an individual for a specified time period, we can only guess at the details of the bigger picture, such as seasonal yield, tending practices, the cost of collecting, processing, and storing each nut type, availability of other food sources, and cultural beliefs (Ericksen 1993). However, the ethnographic and archaeological records do give us undisputed evidence that nuts were brought into settlements by prehistoric Native Americans and that they were an important part of the Eastern Woodlands diet (e.g., Asch and Asch 1985; Ericksen 1993; Wymer 1990).

Seeds

There were 539 seeds, weighing 1.7 grams, recovered from 25 contexts (83% ubiquity) at the site (Table 1). Seeds comprise 2% of the floral assemblage at a density of 1.7 fragments per liter of sediment (0.01 g/L).

Of the 539 seeds recovered, 521 were identified and represent 17 different plant taxa (Table 4). Archaeobotanists generally place seed taxa from prehistoric floral assemblages into four categories: (1) cultivated species that include maize, beans, squash, tobacco, and members of the Eastern Agricultural Complex (EAC), (2) fleshy fruits/berries, (3) seed rain, which includes ruderal and other taxa from the surrounding environment, and (4) other. These designations have been determined using evidence from ethnographic sources and archaeological patterns of ubiquity and frequency (e.g., Wymer 1987). Cultigens, fruits, and some of the "other" seeds (such as bedstraw, which in some cases was used as a dye plant) are assumed to represent economically and commonly utilized taxa. Seed rain taxa, on the other hand, usually occur in low frequencies, and because of seed dispersal mechanisms (wind, animal droppings, and attachment to clothing and hair), are believed to be part of the archaeobotanical assemblage due to accidental inclusion (Asch and Asch 1985). New research continues to expand the "other" seed category to include medicinal, dye, and fiber plants (Jakes and Ericksen 2001). The seed assemblage from the Bryan site includes Categories 1, 2, and 3; however, in Category 1 tobacco (*Nicotiana* sp.) was not recovered and maize and squash rind will be discussed later in their own sections.

Table 4. Identified seed summary of the Bryan site (46Oh65).

	Count	% of Identified Seed Assemblage	Context Ubiquity
Cultigens			
Beans	85	16%	60%
Maygrass	2	<1%	3%
Sunflower	1	<1%	3%
Fleshy Fruits			
Sumac	370	71%	73%
Grape	24	5%	43%
Raspberry	5	1%	10%
Ruderal Plants			
Bedstraw	11	2%	20%
Chenopodium	9	2%	17%
Grass	3	<1%	10%
Rush	3	<1%	3%
Violet	2	<1%	7%
Canarygrass	1	<1%	3%
Dogwood	1	<1%	3%
Foxglove	1	<1%	3%
Saltbush	1	<1%	3%
Smartweed	1	<1%	3%
Spurge	1	<1%	3%
Identified Seed Total	**521**	**100%**	
Unidentified Seed Total	18		
SEED TOTAL	**539**		

Category 1: Cultigens

There were 85 beans (*Phaseolus vulgaris*) recovered from 18 contexts (60% ubiquity), accounting for 16% of identified seeds. All specimens were fragmented and, as such, no measurements on bean size were taken. The common bean was introduced into the region beginning at about A.D. 1000 – 1200 (Hart and Scarry 1999) and occurs regularly in botanical assemblages at Late Prehistoric sites in the Ohio Valley. However, generally speaking, beans are typically recovered from archaeological contexts in small quantities and Fritz (2009) suggests that this low occurrence may be a product of carbonization rather than utilization. She has found that, when carbonized, beans typically shrink approximately 9%, the seed coat becomes very brittle and flakes off, and the cotyledons split easily in two, causing the hilum to fall off. This speaks to the fragile nature of these seeds, in particular, and if seed fragments do survive (without seed coat or hilum markings), they can be difficult to identify. Beans are a protein-rich food source that can be cooked, mashed, or dried for later use. Beans become available for consumption during the fall months (USDA 2008) but because of their storability, cannot be used to determine seasonality.

Two of the six Eastern Agricultural Complex (EAC) genera are present at the site (maygrass and sunflower) and comprise less than 1% of the identified seeds. The six taxa of the EAC include chenopod, maygrass, erect knotweed, sumpweed, little barley, and sunflower.

These seeds were cultivated extensively during the Woodland Period but during the Late Prehistoric Period in the Middle Ohio Valley and lower Upper Ohio Valley EAC horticulture was replaced by maize agriculture. Sunflower was the exception, however, as it continued to be used into the Late Prehistoric and Protohistoric Periods. Two maygrass (*Phalaris caroliniana*) seeds were recovered from Feature 46 and their occurrence here may either bring into question the date of this feature (i.e., it may not be Late Prehstoric), or their presence could indicate that maygrass was being used as a low ranking spring-ripening fallback food. Maygrass is not native to the West Virginia panhandle region, so its presence suggests that its range was anthropogenically extended (spread to the area in prehistory through human agency) for use as a domesticate (Cowan 1978). Maygrass is a starchy seed that ripens in late spring/early summer. A single sunflower (*Helianthus annuus*) kernel (seed lacking pericarp) was recovered from Feature 72. The kernel was fragmented and measurements to determine domestication could not be taken (however, it did appear to be within domesticated size range). Sunflower is typically recovered from open site archaeological contexts in low frequencies and Wright (2008) argues that this may be a product of processing. She argues that these oily seeds are ground up in order to extract their valued oils, and therefore any of the mechanically damaged residues that might be tossed into the fire or burned in a trash pit would be so friable after charring that the probability of surviving burial and retrieval is very low. Sunflower seeds ripen in the fall months and, like nuts, if not eaten or processed for oil immediately, the seeds can be parched and stored for later use, so seasonality cannot be inferred by the presence of sunflower in a botanical assemblage.

Category 2: Fleshy Fruits/Berries

There were three taxa of edible fruits/berries that likely were consumed/used at the site, including sumac (*Rhus* sp. n=370), grape (*Vitis* sp. n=24), and raspberry/blackberry/bramble (*Rubus* sp. n=5).

Sumac dominated the seed assemblage, accounting for 71% of identified seeds with 73% ubiquity. Sumac berries ripen in the fall and can remain on the tree over the winter months so could conceivably be collected and processed through the cold months (Forest Service 1974). Ethnographic sources suggest that sumac may have been used for preparing a sour beverage and for medicinal and smoking purposes (Yarnell 1964:153); archaeological studies suggest that it also was used as a source of colorant for textiles (Jakes and Ericksen 2001).

The grape seed fragments account for 5% of identified seeds and they were recovered from 13 features. A number of grape species are common throughout West Virginia and they bear ripe fruit from late summer into the fall months. Grapes are eaten fresh or also can be dried for winter use (Yarnell 1964:65). Because these fruits can be dried for later use, their presence is not particularly useful for determinations of seasonality. A dried fruit could have been eaten and its seed/pit discarded at any time during the year if the seed/pit is left in the fruit when dried.

The raspberry/blackberry/bramble seeds were recovered from three contexts that include Feature 14, Feature 65, and the house floor. The *Rubus* genus includes about 400 species of shrubs and vines that are common to the temperate climates of North America. These hardy plants thrive in all types of environments but prefer somewhat open and disturbed areas. The berries ripen in the summer months of July and August (USDA 2008). Raspberry/blackberries were used by prehistoric people for food and medicine (Yarnell 1964:58-59). Because of high water content, these berries are difficult to dry for later use, though it is not impossible. As such, seasonality is often implied when *Rubus* sp. seeds are present.

Category 3: Seed Rain

Seeds (n=34) from eleven taxa likely accidentally ended up in 9 of the 30 sampled archaeological deposits (30% ubiquity) as a result of "seed rain." The incidental presence of ruderal and other seeds at site 46Oh65 suggest that the contexts from which they were recovered were open at least during summer and fall months and even into the winter months for those plants whose seeds remain on the plant until knocked off or until new early spring growth topples the old. The seeds in this category can be found in a variety of habitats (prairie openings; low, wet areas; and forest), all of which could have occurred near the site.

Bedstraw (*Galium* sp.) produces seeds in the summer months and is a plant that thrives in woods as well as open and disturbed environments. The seeds are bristly and naturally dispersed by sticking to the clothing, hair, or fur of passersby. Jakes and Ericksen (2001) have identified bedstraw as a dye plant, and thus it could have been intentionally brought back to the site as an economic plant resource. However, the presence of so few bedstraw seeds (n=11) from six contexts most likely means that this species made its way to the site via natural means of seed dispersal and is probably just seed rain. Finding bedstraw seeds at a site indicates that the seeds were charred during the early summer because this plant usually shrivels up in the heat of summer, limiting further dispersal.

Wild chenopod (*Chenopodium* sp. n=9) was recovered from five contexts that include Features 51, 56, 115, 116, and the house floor. Chenopod seeds ripen in late fall and plants thrive in disturbed habitats like those found around habitation sites and clearings. Both seeds and young leaves of wild chenopod are known food sources (Peterson and Munson 1984); however, the fact that very low frequencies were recovered might suggest that its presence is more a factor of seed rain than it is of intentional use.

Grasses recovered include canarygrass (*Panicum* sp. n=1), foxglove (*Setaria* sp. n=1), and three seeds that could only be identified to the grass family (Poaceae) due to fragmentation and deterioration of seed coat markings. These seeds were recovered from Features 14, 56, 113, and the house floor. Most kinds of grass have seeds that ripen during the summer and fall months, so the presence of these seeds could be an indication of the season of use for these contexts. Defining grass seeds as "seed rain," in this case, is not suggesting that the seeds, alone, accidentally made their way from prairie openings to the hearth on the fur of a dog. Rather, the grass *stems*, with seeds attached, could have been brought to the site to be used in making mats and containers or as roofing, for example. Once at the site, some of the seeds on the stems could have fallen off and become charred accidentally.

Rush (*Scirpus* sp. n=3), saltbush (*Atriplex* sp. n=1), and smartweed (*Polygonum* sp. n=1) were recovered from Features 14, 116, and the house floor. These perennial species thrive in all types of habitats but prefer moist areas, and their seeds become ripe in the summer months (Britton and Brown 1936; Fernald 1950; USDA 2008).

A single dogwood (*Cornus florida*) seed was recovered from the house floor. Dogwood seeds are from a small tree species that thrived in the area surrounding the site, as attested to by its presence in the wood charcoal assemblage. Dogwood seeds ripen from late summer through early fall and seed dispersal is largely by birds and animals (Forest Service 1974).

Spurge (*Euphorbia* sp. n=1) was recovered from Feature 14 and is a small matted annual whose seeds ripen in the summer months. Violet (*Viola* sp. n=2) was recovered from Feature 11 and the house floor. Violet is a genus of flowering plants with hundreds of species that thrive in a variety of environments and whose seeds ripen in late summer to early fall.

Because seed rain seeds are accidental inclusions in the botanical assemblage, and not something that would have been stored for later use, they are probably the best source of seasonality information in botanical assemblages. At the Bryan Site, 30% of all contexts contain these seasonal indicators and they include: Features 14, 31, 51, 56, 99, 113, 115, 116, and the house floor. The remaining contexts contain evidence of food remains but they are all storable and transportable and, therefore, could have been charred at any time during the year. Based on the seed rain species, the Bryan site clearly was occupied during the summer and fall months.

Corn

The corn (*Zea mays*) assemblage consists of 1,490 specimens, weighing 14.8 grams, and accounts for 4% of the plant assemblage (Table 1). Corn density is 4.6 fragments, or 0.05 grams, per liter of soil and was recovered from 27 of 30 sampled contexts—indicating that corn was a staple food source of the Monongahela population that occupied the Bryan Site. Features 26, 37, and 46 contained no corn remains.

Corn ripens in the late summer to early fall and can be eaten fresh or dried for later use. It is difficult to speculate on whether maize agriculture and harvesting took place near the site because there is little evidence of harvest byproducts such as cobs, rachis, cupules, and glumes. Kernels account for 94% of the corn assemblage (Appendix B) and no cob fragments were recovered. Eighty-six cupules and a single glume account for 6% of the corn assemblage. Stray corn cupules are a byproduct of corn processing (e.g., shelling) and, as such, can be indicative of harvest activities (Scarry 1993), but in small numbers, could also simply be evidence of careless processing before storage (where cupules and glumes remain attached to the odd kernel). In comparison to sites where corn was raised in nearby fields, The late Late Woodland Woods Site (46MS14) reported corn kernels comprising 50% of the corn assemblage and cupules, glumes, and cob fragments comprising the remaining 50% (Wymer 1987). Scarry (1993) reports 70% kernels and 30% cupules for the Mississippian West Jefferson Site and 60% kernels and 40% cupules for the Mississippian Moundville I Site. The lack of cob fragments could be an indication that corn was stored and transported to this site, however, the possibility cannot be ruled out that cobs could have been burned or left to rot in unexcavated areas of the site.

The recovery of whole kernels allows for some study of maize cultivar characteristics, (although cobs provide more information) (Blake and Cutler 2001: 40-45; King 1987; Nickerson 1953). Charred kernels retain enough of their original shape that measurements of depth, width, and thickness can be diagnostic. Although the size of a kernel can depend on its position on a cob (e.g., the smallest kernels are at the tip of the cob), the relative dimensions remain constant (Wagner 1987). Table 5 provides a summary of measurements taken on 13 kernels, from five contexts that were complete enough to determine kernel depth, width, and thickness. Measurements have not been corrected for shrinkage due to carbonization. The width-to-depth ratios are consistent with modern, early-maturing Northern Flint varieties as reported by Wagner (1987). Slight variation is attributable to different types of Northern Flint varieties. Southwestern and Southern Dent varieties typically have width-to-depth ratios of 1.0 or less. Although the sample size is not large enough to suggest these frequencies are an accurate representation of the maize varieties raised by the occupants of the Bryan site, the slight variability in the sample does allow us to note that several *different* varieties may have been

grown to hedge against climate variation and the environmental risks of crop failure (Scarry 1993).

Table 5. Corn (*Zea mays*) kernel measurements* from the Bryan site (46Oh65).

Context	Kernel Depth (mm)	Kernel Width (mm)	Kernel Thickness (mm)	Ratio Width:Depth (mm)
Feature 14	6	8.5	4	1.4
	6	8	5	1.3
	6	7.5	5	1.3
	6	9	5	1.5
	7	8	4	1.1
	7	9	5	1.3
	7	9	5	1.3
	8	10	6	1.3
Feature 56	6	9	6	1.5
	6	8	5	1.3
Feature 106	5.5	9.5	5.5	1.7
Feature 116	5	8.5	5	1.7
Feature 118	6	11	6	1.8

* Not corrected for shrinkage due to carbonization.

Squash Rind

There were just two squash rind (*Cucurbita pepo*) fragments, weighing 0.002 grams, recovered from Features 81 and 117 (Appendix B). Although squash seeds and flesh are edible, these small fruits also may have been hollowed out and used as containers or fishing-net floats (Fritz 1999). Whether they were a baked food source, were used as containers, or served as a dry fuel is difficult to know with the available evidence.

Berry Flesh

A complete unidentified charred berry, weighing 0.04 grams, was recovered from Feature 53. The deflated morphology of the berry reveals no attachment point on the outer skin and no internal seeds are visible. The berry has a diameter of approximately 1.8 cm and resembles a wild cherry or grape. Because this is an unidentified type of berry, it is not known if it is edible for humans. The berry was likely charred in a dried state (deflated morphology) since a fresh berry would have puffed up with moisture expansion when heated.

Grass Stems/Nodules

There were 55 grass stem segments that included nodules, weighing a total of 0.3 grams, recovered from 10 contexts. The species of the grass stem fragments could not be identified due to fragmentation; however, it appears that all belong to the same species. Grass stems can end up charred in an archaeobotanical assemblage in a number of ways, including as fire starter material or as discard from disintegrating household items made with grass stems, to name but a few.

Unidentified Plant Material

A total of 65 unidentified plant remains, weighing 0.4 grams and representing less than 1% of the floral assemblage, were recovered from the site (Table1). The general category of unidentified remains includes congealed material, sap, stems, buds, etc. that are not assignable to any of the other categories previously discussed.

Discussion

In this chapter I have presented the results of the archaeobotanical analysis of 39 soil samples taken from 30 Monongahela cultural contexts excavated during Phase III archaeological investigations at the Bryan Site (46Oh65) in Ohio County, West Virginia. The botanical remains identified from the analysis provide insight into the plant-related activities that went on at the site and the kinds of plants that were growing in the surrounding environment. The following discussion considers the results of the archaeobotanical analyses in the context of site formation processes, cultural practices, and any bias (e.g., preservation or sampling) that might have affected the results.

The wood, nut, and wild seed taxa recovered from the site correspond with taxa that could have been found within the Mixed Mesophytic Forest that surrounded this upland locale. Generally speaking, wood density at the site is high and within the taxa identified, it is clear that a wide variety of wood species were chosen for fuel, including hardwoods, softwoods, and secondary growth species - likely representing the dominant species in the area immediately surrounding the site. With so many disturbed-habitat species in the assemblage, it is likely that the forests around the site had been cleared, perhaps using fire, and some cleared areas had re-grown with secondary-growth species. Wood density is highest in Features 46, 56, and 65. Nutshell density is low but ubiquity is high, suggesting that nuts (hickory, black walnut, and butternut) were an important supplemental food or oil resource for the site occupants. Nut density is highest in Feature 72 and this feature was likely near an area where fall nut harvest processing (in moderate quantities) took place. The seed and corn assemblage at the site is robust and ubiquitous in comparison to many other Monongahela sites in the area that often produced low frequencies of recovered plant remains (e.g., King 1999; McConaughy 2008; Nass and Hart 2000). Household staples at the Bryan site include corn, beans, and sumac berries.

Figure 3 shows an illustration of the density of groupings of plant remains by context. The economic seed grouping includes corn, beans, maygrass, sunflower, and sumac. The non-

cultigen seed grouping includes grape, blackberry, and all ruderal seeds. It is clear that (1) nuts and economically important seeds are present in almost all contexts (with the exception of Feature 26, which contained only wood) and (2) *both* nuts and economically important seeds are found together, with varying relative frequencies, in almost all contexts (with the exception of Feature 37, which contained just seven nutshell fragments). There are 17 contexts (57%) that include seasonally diagnostic non-cultigens (described in the results section) that likely ended up in the botanical assemblage by accident while the context was open. That is to say, in more than half of all contexts there are indications of summer and fall occupation. Nuts, corn, beans, maygrass, sunflower, and sumac may have been grown at the site; however, they are also all storable and transportable resources whose presence cannot give us stand-alone evidence of year-round occupation or site agriculture. However, the presence of so many storable, plant-related food types suggests that the site occupants would have been prepared for a winter occupation.

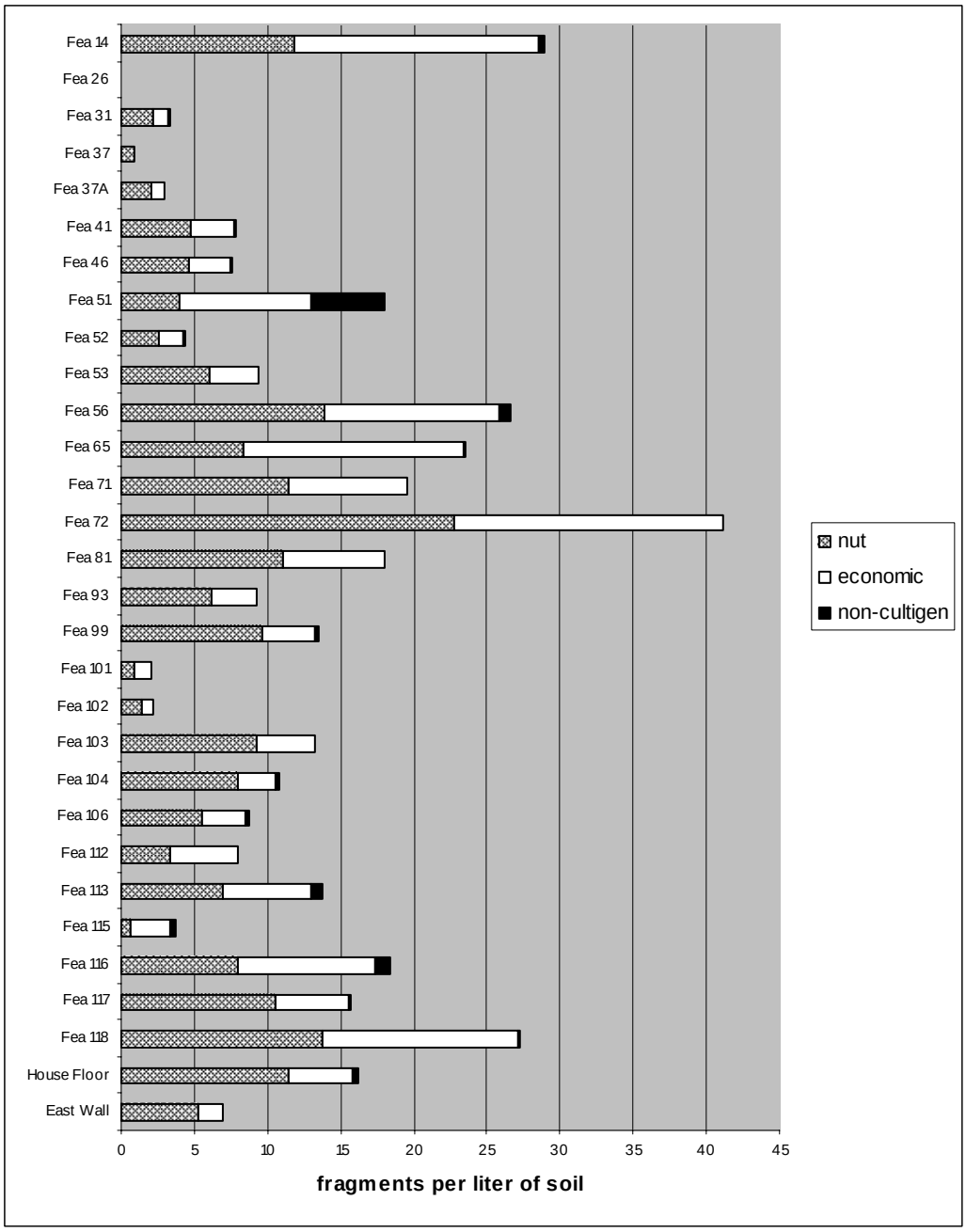

Figure 3. Density of nuts, economically important seeds, and non-cultivated seeds by context at the Bryan site (460h65).

Botanical evidence to support year-round occupancy at the Bryan Site includes (1) high wood density and diversity of taxa, (2) 97% ubiquity of nut remains, (3) 90% ubiquity of corn and beans, and (4) the presence of both spring (maygrass) and fall-ripening (corn, beans, nuts) food sources. However, a complete absence of corn cobs – a byproduct of harvesting activity of the main food staple – cannot help but raise the question of whether corn agriculture was practiced at the site. Perhaps the cobs were disposed of in features outside the scope of the

excavation, or perhaps the site was used on a seasonal (summer/fall) basis for logistical purposes and a storable food supply, grown elsewhere, was transported in.

It is not known whether the Monongahela chose upland sites in an attempt to avoid late spring and early autumn frosts that might further restrict an already short growing season for maize agriculture (Johnson et al.1989), or if they chose these locales for defensive positioning (George 1983). However, cultivatable land could be found in both the uplands and lowlands and archaeological evidence shows no significant difference in the importance of maize in skeletal populations of both topographic site types (Sciulli 1995). What *is* known about Late Prehistoric Monongahela populations is that they were contemporaneous with Fort Ancient populations of the Middle Ohio River Valley and shared much of the same subsistence and agricultural practices, with some minor differences. Based on botanical data from 19 southwestern Pennsylvania Monongahela sites ranging from early to late in the Late Prehistoric Period, King (1999) found the culture group to be characterized by a number of distinctive traits. There was a heavy reliance on Northern Flint maize agriculture that often, but not always, included the use of beans and small amounts of squash. Nuts occur at most sites but in low quantities, as do fleshy fruits – the most common taxa being grape and blackberry. Recovery of sumac seeds is rare. Members of the Eastern Agricultural Complex (most notably chenopod and sunflower) were also used, and although domesticated and wild chenopod have been reported, none were recovered from the Late Monongahela Period sites analyzed. In comparison, the Fort Ancient culture of the Ohio region was completely reliant on maize and bean agriculture, to the point of excluding previously grown EAC cultigens (with the exception of sunflower) from their diets (Wagner 1987). Sumac was the most common fruit seed recovered in fairly large quantities, as was purslane (*Portulaca* sp.).

Botanical results from the Bryan site in the northern panhandle of West Virginia, sandwiched between the Ohio Fort Ancient and the Pennsylvania Monongahela Tradition, demonstrates subsistence practices common to both groups. The Monongahela occupants at the Bryan site relied on maize and bean agriculture for their staple food supply, as evidence by frequency and ubiquity data. Sumac was also a cultural staple – likely used as a beverage, a medicine, and/or a dye ingredient – yet grape and blackberry were also present in small quantities. Nuts were an important (ubiquitous), yet low frequency, supplemental food/oil source while squash, sunflower, and maygrass were present but only in single-digit quantities.

Conclusions

The few hundred years around the beginning of the Late Prehistoric Period was a time of great change in prehistoric Native American subsistence practices. In the northern panhandle of West Virginia and in the lower Upper Ohio River Valley in general, this change manifested as a rather dramatic shift from the Woodland Period subsistence pattern of growing native seed crops (the Eastern Agricultural Complex) to a subsistence base dominated by maize-and-bean agriculture in the Late Prehistoric Period. The botanical assemblage at the Bryan site (46Oh65) offers a clear indication that its Late Prehistoric Monongahela Tradition occupants were dependent on a maize-and-bean subsistence base supplemented with gathered wild resources that

most significantly included nuts and sumac berries. There also is some evidence that sunflower and maygrass continued to be cultivated – perhaps for valued sunflower oil and a spring-ripening fallback food source. Nonetheless, the West Virginia panhandle Monongahela groups blended subsistence practices used by their Ohio Fort Ancient neighbors to the west as well as the Pennsylvania Monongahela to the east.

Appendix A. Archaeobotanical summary of samples for the Bryan site (46Oh65).

Provenience	Wood (n / g)	Nut (n / g)	Seeds (n / g)	Squash (n / g)	Corn (n / g)	Other (n / g)	Total (n / g)
Feature 14, NW ¼, Lv1	1,629 / 18.37	182 / 2.99	24 / 0.050	-	325 / 5.284	19 / 0.08	2,179 / 26.77
Feature 14, SE ¼, Lv1	1,494 / 11.60	89 / 0.86	12 / 0.027	-	32 / 0.200	6 / 0.02	1,633 / 12.71
Feature 26, S ½	1,032 / 4.33	-	-	-	-	-	1,032 / 4.33
Feature 31, W ½, Lv1	94 / 0.61	16 / 0.15	1 / 0.002	-	4 / 0.029	-	115 / 0.79
Feature 31, W ½, Lv3	280 / 2.11	31 / 0.33	4 / 0.006	-	14 / .057	-	329 / 2.50
Feature 37, N ½, Lv1	343 / 1.48	7 / 0.05	-	-	-	3 / 0.02	353 / 1.55
Feature 37A, N ½, Lv1	73 / 0.43	6 / 0.09	-	-	3 / 0.01	-	82 / 0.53
Feature 41, S ½, Lv1	104 / 0.79	38 / 0.60	5 / 0.004	-	22 / .140	-	169 / 1.53
Feature 46, N ½, Lv1	1,846 / 32.70	64 / 0.77	42 / 0.086	-	-	1 / 0.01	1,953 / 33.57
Feature 51, Lv1	54 / 0.53	4 / 0.06	10 / .017	-	4 / 0.057	2 / 0.02	74 / 0.68
Feature 52, N ½, Lv1	88 / 0.86	13 / 0.23	2 / 0.028	-	7 / 0.023	-	110 / 1.14
Feature 53, W ½, Lv1	573 / 5.24	66 / 0.76	9 / 0.026	-	28 / .157	1 / 0.04	677 / 6.22
Feature 56, N ½, Lv1	1,709 / 18.09	141 / 1.96	59 / 0.207	-	72 / 0.738	1 / <.01	1,982 / 21.00
Feature 65, E ½, Lv1	2,081 / 33.22	118 / 1.67	48 / 0.164	-	166 / 1.562	29 / 0.11	2,442 / 36.73
Feature 71, E ½, Lv1	496 / 4.41	95 / 1.19	13 / 0.066	-	52 / 0.364	3 / 0.04	659 / 6.07
Feature 72, E ½, Lv1	768 / 6.25	182 / 2.60	20 / 0.071	-	127 / 1.012	7 / 0.09	1,104 / 10.02
Feature 81, N ½, Lv1	247 / 2.22	53 / 0.73	5 / 0.020	-	29 / .193	3 / 0.02	337 / 3.18
Feature 81, N ½, Lv2	177 / 1.09	35 / 0.42	12 / 0.036	1 / <.001	11 / 0.072	1 / 0.01	237 / 1.63
Feature 93, N ½, Lv1	1,375 / 18.68	112 / 1.33	7 / 0.042	-	48 / 0.342	-	1,542 / 20.39

Appendix A continued. Archaeobotanical summary of samples for the Bryan site (46Oh65).

Provenience	Wood (n / g)	Nut (n / g)	Seeds (n / g)	Squash (n / g)	Corn (n / g)	Other (n / g)	Total (n / g)
Feature 99, NW ¼, Lv1	650 / 5.26	51 / 0.63	6 / 0.025	-	20 / .136	1 / 0.01	728 / 6.06
Feature 99, SE ¼, Lv1	791 / 7.20	93 / 1.34	9 / 0.023	-	23 / .114	1 / 0.01	917 / 8.69
Feature 101, E ½, Lv1	141 / 1.23	7 / 0.08	-	-	9 / 0.055	-	157 / 1.37
Feature 102, N ½, Lv1	234 / 2.23	11 / 0.13	2 / 0.010	-	4 / 0.019	-	251 / 2.39
Feature 103, E ½	937 / 9.17	106 / 1.47	15 / 0.043	-	30 / 0.231	4 / 0.03	1,092 / 10.94
Feature 104, S ½, Lv1	196 / 1.79	32 / 0.43	1 / 0.001	-	10 / .057	-	239 / 2.28
Feature 106, S ½, Lv1	588 / 5.19	74 / 0.84	10 / 0.033	-	31 / 0.296	6 / 0.07	709 / 6.43
Feature 112, N ½	86 / 0.56	11 / 0.09	1 / 0.003	-	13 / .117	-	111 / 0.77
Feature 113, N ½, Lv1	124 / 0.89	22 / 0.22	3 / 0.014	-	17 / .095	-	166 / 1.22
Feature 115, S ½, Lv1	114 / 1.55	2 / 0.02	2 / 0.001	-	7 / 0.041	-	125 / 1.61
Feature 116, S ½	646 / 7.00	72 / 0.87	24 / 0.082	-	70 / 0.874	5 / 0.02	817 / 8.85
Feature 117, N ½, Lv1	824 / 1.31	94 / 1.09	12 / 0.059	-	41 / 0.293	-	971 / 2.75
Feature 117, N ½, Lv5	1,077 / 8.47	142 / 1.44	12 / 0.035	1 / 0.002	48 / 0.261	3 / 0.02	1,283 / 10.23
Feature 118, W ½, Lv1	2,139 / 19.33	171 / 3.64	91 / 0.316	-	72 / 0.771	21 / 0.08	2,494 / 24.14
House Floor, NE ¼	734 / 6.70	79 / 1.06	11 / 0.053	-	35 / 0.224	1 / <.01	860 / 8.04
House Floor, SW ¼	1,820 / 17.40	149 / 1.87	23 / 0.075	-	40 / 0.273	-	2,032 / 19.62
House Floor, SE ¼	1,679 / 19.05	173 / 2.55	30 / 0.075	-	37 / 0.307	3 / 0.03	1,922 / 22.01
House Floor, NW ¼	1,422 / 13.74	102 / 1.67	14 / 0.030	-	26 / 0.263	-	1,564 / 15.70
East Wall #1	115 / 0.92	28 / 0.36	-	-	11 / 0.092	-	154 / 1.37
East Wall #2	51 / 0.38	14 / 0.14	-	-	2 / 0.012	-	67 / 0.53

Appendix B. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 14** **NW ¼, SE ¼** **Level 1**	**Feature 26** **S ½**	**Feature 31** **W ½** **Levels 1 and 3**	**Feature 37** **N ½** **Level 1**
Feature Type	large oval basin	small post	large oval basin	small oval basin
Flotation #	004 and 005	001	032 and 034	006
Soil Volume (liters)	23	4	21	8
Wood Total (n / g)	**3,123 / 29.97**	**1,032 / 4.33**	**374 / 2.72**	**343 / 1.48**
Ash (*Fraxinus* sp.)	-	-	-	-
Basswood (*Tilia americana*)	-	-	2	-
Beech (*Fagus grandifolia*)	1	-	2	-
Black Cherry (*Prunus serotina*)	-	-	-	1
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	3	-	-	-
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	3	1	2	-
Honeylocust (*Gleditsia triacanthos*)	3	-	10	-
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	12	-	16	-
Oak, Red (*Quercus* sp.)	1	19	1	-
Oak, White (*Quercus alba*)	-	-	6	-
Persimmon (*Diospyros virginiana*)	-	-	-	-
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	1	-	-	-
Sassafrass (*Sassafrass albidum*)	-	-	-	-
Sumac (*Rhus* sp.)	-	-	-	-
Sycamore (*Platanus occidentalis)*	1	-	-	-
Walnut (*Juglans* sp.)	15	-	1	19
Total Identified	40	20	40	20
Total Unidentified / Bark	0	0	0	0
Identifications Attempted	40	20	40	20
Nutshell Total (n / g)	**271 / 3.85**	**0**	**47 / 0.48**	**7 / 0.05**
Black walnut (*Juglans nigra*)	31 / 0.39	-	20 / 0.25	-
Butternut (*Juglans cinerea*)	17 / 0.17	-	5 / 0.07	-
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	223 / 3.29	-	22 / 0.16	7 / 0.05
Nutmeat Total	**0**	**0**	**0**	**0**
Seed Total (n / g)	**36 / 0.077**	**0**	**5 / 0.008**	**0**
Bean (*Phaseolus vulgaris*)	3 / 0.013	-	-	-
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	-	-	-	-
Raspberry / Bramble (*Rubus* sp.)	2 / 0.003	-	-	-
Sumac (*Rhus* sp.)	27 / 0.55	-	3 / 0.004	-
Bedstraw (*Galium* sp.)	1 / 0.004	-	2 / 0.004	-
Canarygrass (*Panicum* sp.)	1 / <.001	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	-
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	1 / 0.001	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	1 / 0.001	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	-	-	-

Squash / Gourd Rind (n / g)	**0**	**0**	**0**	**0**
Corn Kernels	**348 / 5.427**	**0**	**16 / 0.068**	**0**
Corn Cupules	**9 / 0.057**	**0**	**2 / 0.018**	**0**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**18 / 0.09**	**0**	**0**	**0**
Unidentified Plant Material	**7 / 0.01**	**0**	**0**	**3 / 0.02**
GRAND TOTAL (n / g)	**3,812 / 39.48**	**1,032 / 4.33**	**444 / 3.29**	**353 / 1.55**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 37A N ½ Level 1**	**Feature 41 S ½ Level 1**	**Feature 46 N ½ Level 1**	**Feature 51 W ½ Level 1**
Feature Type	small post	large oval basin	oval basin	small circular basin
Flotation #	007	018	013	009
Soil Volume (liters)	3	8	14	1
Wood Total (n / g)	**73 / 0.43**	**104 / 0.79**	**1,846 / 32.70**	**54 / 0.53**
Ash (*Fraxinus* sp.)	-	-	-	-
Basswood (*Tilia americana*)	-	2	-	-
Beech (*Fagus grandifolia*)	3	-	-	-
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	-	2	-	2
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	2	1	-	1
Honeylocust (*Gleditsia triacanthos*)	2	2	17	2
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	-	3	-	2
Oak, Red (*Quercus* sp.)	-	1	3	2
Oak, White (*Quercus alba*)	1	-	-	-
Persimmon (*Diospyros virginiana*)	-	-	-	-
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	1	-	-	-
Sassafrass (*Sassafrass albidum*)	5	3	-	-
Sumac (*Rhus* sp.)	3	2	-	1
Sycamore (*Platanus occidentalis)*	-	-	-	1
Walnut (*Juglans* sp.)	3	1	-	3
Total Identified	20	17	20	14
Total Unidentified / Bark	0	3	0	6
Identifications Attempted	20	20	20	20
Nutshell Total (n / g)	**6 / 0.09**	**38 / 0.60**	**64 / 0.77**	**4 / 0.06**
Black walnut (*Juglans nigra*)	-	20 / 0.33	1 / 0.16	-
Butternut (*Juglans cinerea*)	1 / 0.01	4 / 0.10	1 / 0.01	-
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	5 / 0.08	14 / 0.17	62 / 0.60	4 / 0.06
Nutmeat Total	**0**	**0**	**0**	**0**
Seed Total (n / g)	**0**	**5 / 0.004**	**42 / 0.086**	**10 / 0.017**
Bean (*Phaseolus vulgaris*)	-	-	-	-
Maygrass (*Phalaris caroliniana*)	-	-	2 / 0.001	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	-	1 / 0.001	1 / 0.003	2 / 0.002
Raspberry / Bramble (*Rubus* sp.)	-	-	-	-
Sumac (*Rhus* sp.)	-	2 / 0.002	39 / 0.082	5 / 0.013
Bedstraw (*Galium* sp.)	-	-	-	2 / 0.002
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	-	1 / <.001
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	-
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	2 / 0.001	-	-

Squash / Gourd Rind (n / g)	**0**	**0**	**0**	**0**
Corn Kernels	**3 / 0.01**	**21 / 0.135**	**0**	**4 / 0.057**
Corn Cupules	**0**	**1 / 0.005**	**0**	**0**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**0**	**0**	**0**	**0**
Unidentified Plant Material	**0**	**0**	**1 / 0.01**	**2 / 0.02**
GRAND TOTAL (n / g)	**82 / 0.53**	**169 / 1.53**	**1,953 / 33.57**	**74 / 0.68**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 52 N ½ Level 1**	**Feature 53 W ½ Level 1**	**Feature 56 N ½ Level 1**	**Feature 65 E ½ Level 1**
Feature Type	oval basin	circular basin	oval basin	oval basin
Flotation #	030	033	035	027
Soil Volume (liters)	5	11	10	14
Wood Total (n / g)	**88 / 0.86**	**573 / 5.24**	**1,709 / 18.09**	**2,081 / 33.22**
Ash (*Fraxinus* sp.)	-	2	-	-
Basswood (*Tilia americana*)	-	-	-	-
Beech (*Fagus grandifolia*)	-	1	3	-
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	1	1	4	3
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	1	-	-	-
Honeylocust (*Gleditsia triacanthos*)	4	7	3	3
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	13	7	6	-
Oak, Red (*Quercus* sp.)	-	-	-	-
Oak, White (*Quercus alba*)	-	-	-	-
Persimmon (*Diospyros virginiana*)	1	1	-	-
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	-	-	-	-
Sassafrass (*Sassafrass albidum*)	-	-	2	1
Sumac (*Rhus* sp.)	-	-	-	-
Sycamore (*Platanus occidentalis)*	-	-	-	-
Walnut (*Juglans* sp.)	-	1	2	13
Total Identified	20	20	20	20
Total Unidentified / Bark	0	0	0	0
Identifications Attempted	20	20	20	20
Nutshell Total (n / g)	**13 / 0.23**	**66 / 0.76**	**139 / 1.93**	**118 / 1.67**
Black walnut (*Juglans nigra*)	5 / 0.11	13 / 0.24	22 / 0.40	30 / 0.40
Butternut (*Juglans cinerea*)	1 / 0.02	7 / 0.08	7 / 0.09	6 / 0.08
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	7 / 0.10	46 / 0.44	110 / 1.44	82 / 1.19
Nutmeat Total	**0**	**0**	**2 / 0.03**	**0**
Seed Total (n / g)	**2 / 0.028**	**9 / 0.026**	**59 / 0.207**	**48 / 0.164**
Bean (*Phaseolus vulgaris*)	1 / 0.026	1 / 0.007	9 / 0.075	8 / 0.056
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	1 / 0.002	-	2 / 0.022	-
Raspberry / Bramble (*Rubus* sp.)	-	-	-	1 / 0.001
Sumac (*Rhus* sp.)	-	8 / 0.019	39 / 0.087	36 / 0.078
Bedstraw (*Galium* sp.)	-	-	3 / 0.007	-
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	1 / 0.001	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	1 / 0.001	-
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	-	4 / 0.014	3 / 0.029

Squash / Gourd Rind (n / g)	**0**	**0**	**0**	**0**
Corn Kernels	**6 / 0.015**	**28 / 0.157**	**71 / 0.732**	**160 / 1.543**
Corn Cupules	**1 / 0.008**	**0**	**1 / 0.006**	**6 / 0.019**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**1 / 0.04**	**0**	**0**
Grass Stems/Nodules	**0**	**0**	**0**	**23 / 0.09**
Unidentified Plant Material	**0**	**0**	**1 / <.01**	**6 / 0.02**
GRAND TOTAL (n / g)	**110 / 1.14**	**677 / 6.22**	**1,982 / 21.00**	**2,442 / 36.73**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 71** **E ½** **Level 1**	**Feature 72** **E ½**	**Feature 81** **N ½** **Levels 1 and 2**	**Feature 93** **N ½** **Level 1**
Feature Type	oval basin	large oval basin	oval basin	shell pit/basin
Flotation #	042	028	014 and 017	025
Soil Volume (liters)	8	8	8	18
Wood Total (n / g)	**496 / 4.41**	**768 / 6.25**	**424 / 3.31**	**1,375 / 18.68**
Ash (*Fraxinus* sp.)	1	1	-	1
Basswood (*Tilia americana*)	-	-	-	-
Beech (*Fagus grandifolia*)	-	-	2	1
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	2	5	2	2
Grape Vine (*Vitis* sp.)	1	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	7	1	2	9
Honeylocust (*Gleditsia triacanthos*)	1	7	14	3
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	2	2	6	-
Oak, Red (*Quercus* sp.)	-	-	2	2
Oak, White (*Quercus alba*)	4	-	2	2
Persimmon (*Diospyros virginiana*)	-	1	-	-
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	-	-	-	-
Sassafrass (*Sassafrass albidum*)	-	-	-	-
Sumac (*Rhus* sp.)	-	-	1	-
Sycamore (*Platanus occidentalis)*	1	2	6	-
Walnut (*Juglans* sp.)	1	1	3	-
Total Identified	20	20	40	20
Total Unidentified / Bark	0	0	0	0
Identifications Attempted	20	20	40	20
Nutshell Total (n / g)	**92 / 1.16**	**182 / 2.60**	**88 / 1.15**	**111 / 1.31**
Black walnut (*Juglans nigra*)	21 / 0.31	16 / 0.17	41 / 0.61	14 / 0.39
Butternut (*Juglans cinerea*)	10 / 0.19	9 / 0.13	3 / 0.05	13 / 0.15
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	61 / 0.66	157 / 2.30	44 / 0.49	84 / 0.77
Nutmeat Total	**3 / 0.03**	**0**	**0**	**1 / 0.02**
Seed Total (n / g)	**13 / 0.066**	**20 / 0.071**	**17 / 0.056**	**7 / 0.042**
Bean (*Phaseolus vulgaris*)	3 / 0.036	3 / 0.022	6 / 0.024	2 / 0.015
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	1 / 0.006	-	-
Grape (*Vitis* sp.)	-	-	-	-
Raspberry / Bramble (*Rubus* sp.)	-	-	-	-
Sumac (*Rhus* sp.)	10 / 0.030	16 / 0.043	10 / 0.027	4 / 0.015
Bedstraw (*Galium* sp.)	-	-	-	-
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	-
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	-	1 / 0.005	1 / 0.012

Squash / Gourd Rind (n / g)	**0**	**0**	**1 / <.001**	**0**
Corn Kernels	**51 / 0.358**	**122 / 0.998**	**38 / 0.261**	**48 / 0.342**
Corn Cupules	**1 / 0.006**	**5 / 0.014**	**2 / 0.004**	**0**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**2 / 0.01**	**0**	**2 / 0.02**	**0**
Unidentified Plant Material	**1 / 0.03**	**7 / 0.09**	**2 / 0.01**	**0**
GRAND TOTAL (n / g)	**659 / 6.07**	**1,104 / 10.02**	**574 / 4.81**	**1,542 / 20.39**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 99 NW ¼, SE ¼ Level 1**	**Feature 101 E ½ Level 1**	**Feature 102 N ½ Level 1**	**Feature 103 E ½**
Feature Type	large oval basin	oval pit	circular basin	circular basin
Flotation #	023 and 024	021	019	026
Soil Volume (liters)	15	8	8	11
Wood Total (n / g)	**1,441 / 12.46**	**141 / 1.23**	**234 / 2.23**	**937 / 9.17**
Ash (*Fraxinus* sp.)	-	-	-	-
Basswood (*Tilia americana*)	-	-	-	-
Beech (*Fagus grandifolia*)	-	-	-	-
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	2
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	6	1	1	9
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	2	-	-	-
Hickory (*Carya* sp.)	6	-	-	1
Honeylocust (*Gleditsia triacanthos*)	1	6	2	3
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	8	1	4	-
Oak, Red (*Quercus* sp.)	12	3	2	1
Oak, White (*Quercus alba*)	-	-	1	2
Persimmon (*Diospyros virginiana*)	1	3	1	-
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	-	2	-	-
Sassafrass (*Sassafrass albidum*)	-	-	5	-
Sumac (*Rhus* sp.)	1	-	-	-
Sycamore (*Platanus occidentalis)*	2	1	2	-
Walnut (*Juglans* sp.)	1	3	2	2
Total Identified	40	20	20	20
Total Unidentified / Bark	0	0	0	0
Identifications Attempted	40	20	20	20
Nutshell Total (n / g)	**144 / 1.97**	**7 / 0.08**	**11 / 0.13**	**102 / 1.45**
Black walnut (*Juglans nigra*)	41 / 0.88	2 / 0.04	1 / 0.01	22 / 0.31
Butternut (*Juglans cinerea*)	29 / 0.40	-	-	2 / 0.03
Hazelnut (*Corylus* sp.)	1 / 0.02	-	-	-
Hickory (*Carya* sp.)	73 / 0.67	5 / 0.04	10 / 0.12	78 / 1.11
Nutmeat Total	**0**	**0**	**0**	**4 / 0.02**
Seed Total (n / g)	**15 / 0.048**	**0**	**2 / 0.010**	**15 / 0.043**
Bean (*Phaseolus vulgaris*)	6 / 0.018	-	1 / 0.006	2 / 0.007
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	2 / 0.012	-	-	-
Raspberry / Bramble (*Rubus* sp.)	-	-	-	-
Sumac (*Rhus* sp.)	6 / 0.016	-	1 / 0.004	12 / 0.028
Bedstraw (*Galium* sp.)	1 / 0.002	-	-	-
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	-
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	-	-	1 / 0.008

Squash / Gourd Rind (n / g)	**0**	**0**	**0**	**0**
Corn Kernels	**38 / 0.209**	**8 / 0.053**	**4 / 0.019**	**28 / 0.224**
Corn Cupules	**5 / 0.041**	**1 / 0.002**	**0**	**2 / 0.007**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**1 / 0.01**	**0**	**0**	**0**
Unidentified Plant Material	**1 / 0.01**	**0**	**0**	**4 / 0.03**
GRAND TOTAL (n / g)	**1,645 / 14.75**	**157 / 1.37**	**251 / 2.39**	**1,092 / 10.94**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 104 S ½ Level 1**	**Feature 106 S ½ Level 1**	**Feature 112 N ½**	**Feature 113 N ½ Level 1**
Feature Type	large post	large post	large post	large post
Flotation #	051	045	043	047
Soil Volume (liters)	4	13	3	3
Wood Total (n / g)	**196 / 1.79**	**588 / 5.19**	**86 / 0.56**	**124 / 0.89**
Ash (*Fraxinus* sp.)	-	-	-	1
Basswood (*Tilia americana*)	2	-	-	1
Beech (*Fagus grandifolia*)	-	-	-	-
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Elm (*Ulmus* sp.)	2	-	1	4
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	4	-	1	1
Honeylocust (*Gleditsia triacanthos*)	2	2	4	6
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	4	9	1	1
Oak, Red (*Quercus* sp.)	-	-	-	-
Oak, White (*Quercus alba*)	1	1	1	1
Persimmon (*Diospyros virginiana*)	-	3	-	3
Pine (*Pinus* sp.)	-	-	-	-
Red Mulberry (*Morus rubra*)	-	2	-	1
Sassafrass (*Sassafrass albidum*)	-	-	-	-
Sumac (*Rhus* sp.)	-	-	-	-
Sycamore (*Platanus occidentalis)*	-	-	-	1
Walnut (*Juglans* sp.)	5	3	-	-
Total Identified	20	20	8	20
Total Unidentified / Bark	0	0	12	0
Identifications Attempted	20	20	20	20
Nutshell Total (n / g)	**32 / 0.43**	**71 / 0.81**	**10 / 0.08**	**21 / 0.21**
Black walnut (*Juglans nigra*)	10 / 0.11	23 / 0.34	4 / 0.03	5 / 0.03
Butternut (*Juglans cinerea*)	4 / 0.04	5 / 0.04	1 / 0.01	1 / 0.01
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	18 / 0.28	43 / 0.43	5 / 0.04	15 / 0.17
Nutmeat Total	**0**	**3 / 0.03**	**1 / 0.01**	**1 / 0.01**
Seed Total (n / g)	**1 / 0.001**	**10 / 0.033**	**1 / 0.003**	**3 / 0.014**
Bean (*Phaseolus vulgaris*)	-	2 / 0.014	-	1 / 0.010
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	1 / 0.001	2 / 0.003	-	1 / 0.004
Raspberry / Bramble (*Rubus* sp.)	-	-	-	-
Sumac (*Rhus* sp.)	-	6 / 0.016	1 / 0.003	-
Bedstraw (*Galium* sp.)	-	-	-	-
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	1 / <.001
Rush (*Scirpus* sp.)	-	-	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	-	-	-
Seeds Unidentified	-	-	-	-

Squash / Gourd Rind (n / g)	**0**	**0**	**0**	**0**
Corn Kernels	**10 / 0.057**	**27 / 0.260**	**13 / 0.117**	**16 / 0.089**
Corn Cupules	**0**	**4 / 0.036**	**0**	**1 / 0.006**
Corn Glumes	**0**	**0**	**0**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**0**	**3 / 0.03**	**0**	**0**
Unidentified Plant Material	**0**	**3 / 0.04**	**0**	**0**
GRAND TOTAL (n / g)	**239 / 2.28**	**709 / 6.43**	**111 / 0.77**	**166 / 1.22**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**Feature 115** **S ½** **Level 1**	**Feature 116** **S ½**	**Feature 117** **N ½** **Levels 1 and 5**	**Feature 118** **W ½** **Level 1**
Feature Type	small post	circular pit	storage pit	oval pit
Flotation #	036	037	029 and 031	046
Soil Volume (liters)	3	9	22	12
Wood Total (n / g)	**114 / 1.55**	**646 / 7.00**	**1,901 / 9.78**	**2,139 / 19.33**
Ash (*Fraxinus* sp.)	-	-	-	-
Basswood (*Tilia americana*)	-	-	-	-
Beech (*Fagus grandifolia*)	-	1	1	-
Black Cherry (*Prunus serotina*)	-	-	-	-
Buckeye (*Aesculus* sp.)	-	-	-	-
Dogwood (*Cornus florida*)	-	-	-	1
Elm (*Ulmus* sp.)	4	2	3	1
Grape Vine (*Vitis* sp.)	-	-	-	-
Hazelnut (*Corylus americana*)	-	-	-	-
Hickory (*Carya* sp.)	3	5	4	5
Honeylocust (*Gleditsia triacanthos*)	6	1	8	-
Kentucky coffeetree (*Gymnocladus dioicus*)	-	-	-	-
Maple (*Acer* sp.)	-	5	12	5
Oak, Red (*Quercus* sp.)	-	-	2	2
Oak, White (*Quercus alba*)	-	1	1	1
Persimmon (*Diospyros virginiana*)	1	-	1	-
Pine (*Pinus* sp.)	-	-	-	1
Red Mulberry (*Morus rubra*)	-	-	-	-
Sassafrass (*Sassafrass albidum*)	6	-	4	2
Sumac (*Rhus* sp.)	-	-	-	-
Sycamore (*Platanus occidentalis)*	-	1	2	-
Walnut (*Juglans* sp.)	-	4	2	2
Total Identified	20	20	40	20
Total Unidentified / Bark	0	0	0	0
Identifications Attempted	20	20	40	20
Nutshell Total (n / g)	**2 / 0.02**	**72 / 0.87**	**234 / 2.52**	**164 / 3.59**
Black walnut (*Juglans nigra*)	-	22 / 0.30	24 / 0.25	42 / 1.23
Butternut (*Juglans cinerea*)	-	11 / 0.14	38 / 0.38	14 / 0.28
Hazelnut (*Corylus* sp.)	-	-	-	-
Hickory (*Carya* sp.)	2 / 0.02	39 / 0.43	172 / 1.89	108 / 2.08
Nutmeat Total	**0**	**0**	**2 / 0.01**	**7 / 0.05**
Seed Total (n / g)	**2 / 0.001**	**24 / 0.082**	**24 / 0.094**	**91 / 0.316**
Bean (*Phaseolus vulgaris*)	-	2 / 0.045	3 / 0.038	22 / 0.150
Maygrass (*Phalaris caroliniana*)	-	-	-	-
Sunflower (*Helianthus annuus*)	-	-	-	-
Grape (*Vitis* sp.)	-	1 / 0.001	1 / 0.006	1 / 0.004
Raspberry / Bramble (*Rubus* sp.)	-	-	-	-
Sumac (*Rhus* sp.)	1 / 0.001	12 / 0.031	19 / 0.049	67 / 0.159
Bedstraw (*Galium* sp.)	-	-	-	-
Canarygrass (*Panicum* sp.)	-	-	-	-
Chenopodium (*Chenopodium* sp.)	1 / <.001	5 / 0.003	-	-
Dogwood (*Cornus florida*)	-	-	-	-
Foxglove (*Setaria* sp.)	-	-	-	-
Grass family (Poaceae)	-	-	-	-
Rush (*Scirpus* sp.)	-	3 / 0.002	-	-
Saltbush (*Atriplex* sp.)	-	-	-	-
Smartweed (*Polygonum* sp.)	-	-	-	-
Spurge (*Euphorbia* sp.)	-	-	-	-
Violet (*Viola* sp.)	-	1 / <.001	-	-
Seeds Unidentified	-	-	1 / 0.001	1 / 0.003

Squash / Gourd Rind (n / g)	**0**	**0**	**1 / 0.002**	**0**
Corn Kernels	**5 / 0.026**	**68 / 0.862**	**75 / 0.483**	**59 / 0.693**
Corn Cupules	**2 / 0.015**	**2 / 0.012**	**13 / 0.069**	**13 / 0.078**
Corn Glumes	**0**	**0**	**1 / 0.002**	**0**
Berry Flesh	**0**	**0**	**0**	**0**
Grass Stems/Nodules	**0**	**3 / 0.01**	**0**	**1 / <.01**
Unidentified Plant Material	**0**	**2 / 0.01**	**3 / 0.02**	**20 / 0.08**
GRAND TOTAL (n / g)	**125 / 1.61**	**817 / 8.85**	**2,254 / 12.98**	**2,494 / 24.14**

Appendix B continued. Botanical inventory of the Bryan site (46Oh65).

Provenience	**House Floor NW ¼, NE ¼, SW ¼, SE ¼ Level 1**	**East Wall #1 and #2**
Feature Type	floor	house wall
Flotation #	040, 041, 044, 048	049 and 050
Soil Volume (liters)	44	8
Wood Total (n / g)	**5,655 / 56.89**	**166 / 1.30**
Ash (*Fraxinus* sp.)	1	-
Basswood (*Tilia americana*)	1	-
Beech (*Fagus grandifolia*)	3	1
Black Cherry (*Prunus serotina*)	-	-
Buckeye (*Aesculus* sp.)	-	-
Dogwood (*Cornus florida*)	4	-
Elm (*Ulmus* sp.)	15	4
Grape Vine (*Vitis* sp.)	-	-
Hazelnut (*Corylus americana*)	1	-
Hickory (*Carya* sp.)	15	5
Honeylocust (*Gleditsia triacanthos*)	5	1
Kentucky coffeetree (*Gymnocladus dioicus*)	2	1
Maple (*Acer* sp.)	12	10
Oak, Red (*Quercus* sp.)	3	2
Oak, White (*Quercus alba*)	4	-
Persimmon (*Diospyros virginiana*)	1	-
Pine (*Pinus* sp.)	-	-
Red Mulberry (*Morus rubra*)	-	-
Sassafrass (*Sassafrass albidum*)	5	-
Sumac (*Rhus* sp.)	-	-
Sycamore (*Platanus occidentalis)*	3	1
Walnut (*Juglans* sp.)	5	1
Total Identified	80	26
Total Unidentified / Bark	0	14
Identifications Attempted	80	40
Nutshell Total (n / g)	**502 / 7.13**	**42 / 0.50**
Black walnut (*Juglans nigra*)	112 / 2.16	11 / 0.17
Butternut (*Juglans cinerea*)	72 / 1.00	7 / 0.10
Hazelnut (*Corylus* sp.)	-	-
Hickory (*Carya* sp.)	318 / 3.97	24 / 0.23
Nutmeat Total	**1 / 0.02**	**0**
Seed Total (n / g)	**78 / 0.233**	**0**
Bean (*Phaseolus vulgaris*)	10 / 0.047	-
Maygrass (*Phalaris caroliniana*)	-	-
Sunflower (*Helianthus annuus*)	-	-
Grape (*Vitis* sp.)	8 / 0.036	-
Raspberry / Bramble (*Rubus* sp.)	2 / 0.002	-
Sumac (*Rhus* sp.)	46 / 0.117	-
Bedstraw (*Galium* sp.)	2 / 0.007	-
Canarygrass (*Panicum* sp.)	-	-
Chenopodium (*Chenopodium* sp.)	1 / 0.001	-
Dogwood (*Cornus florida*)	1 / 0.012	-
Foxglove (*Setaria* sp.)	1 / 0.001	-
Grass family (Poaceae)	1 / 0.001	-
Rush (*Scirpus* sp.)	-	-
Saltbush (*Atriplex* sp.)	-	-
Smartweed (*Polygonum* sp.)	1 / <.001	-
Spurge (*Euphorbia* sp.)	-	-
Violet (*Viola* sp.)	1 / 0.002	-
Seeds Unidentified	4 / 0.007	-

Squash / Gourd Rind (n / g)	**0**	**0**
Corn Kernels	**124 / 0.970**	**12 / 0.102**
Corn Cupules	**14 / 0.097**	**1 / 0.002**
Corn Glumes	**0**	**0**
Berry Flesh	**0**	**0**
Grass Stems/Nodules	**2 / 0.01**	**0**
Unidentified Plant Material	**2 / 0.02**	**0**
GRAND TOTAL (n / g)	**6,378 / 65.37**	**221 / 1.90**

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