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EARLY MIDDLE ARCHAIC PLACEMAKING: A FAUNAL ANALYSIS OF THREE PIT DEPOSITS FROM SILVER GLEN SPRINGS (8LA1), FLORIDA

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EARLY MIDDLE ARCHAIC PLACEMAKING: A FAUNAL ANALYSIS OF THREE PIT DEPOSITS FROM SILVER GLEN SPRINGS (8LA1), FLORIDA

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DEPARTMENT OF ANTHROPOLOGY

BY

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DEDICATION

To my husband, Josh, for welcoming me to the United States. Without his love and support this thesis would not have been possible. Also, to our son, expected December 2017.

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ABSTRACT

In this thesis I examine the vertebrate faunal remains from three pit deposits dating between approximately 8500-7000 calibrated years BP, which were recovered from the site of Silver Glen Springs (8LA1) in northwestern Florida. All three of the deposits contain a variety of freshwater riverine fauna, including multiple species of fish, turtle, waterfowl, small mammal, and deer. I have provided a complete table of my faunal data in the appendix of this thesis.

Using the faunal data from the pit deposits, I provide an environmental reconstruction between 8500-7000 cal BP for Silver Glen Springs. To strengthen my reconstruction, I summarize both the modern environmental conditions at Silver Glen Springs and the current knowledge regarding environmental conditions in Florida during the Middle Archaic period (8900-5800 cal BP).

I also argue that repeated depositional activities which referenced earlier traditions were a form of placemaking that persisted throughout the Middle Archaic period and surrounded the onset of shell mound construction. To test my hypothesis, I examine similarities between the early Middle Archaic (8900-7400 cal BP) pit deposits analyzed in this thesis and subsequent Mt. Taylor period (7400-4600 cal BP) vertebrate faunal deposits from Silver Glen Springs. My comparison includes a diversity analysis using both the Shannon-Wiener Diversity Index and the Simpson Diversity Index.

My results show that the creation of specific, consistent types of deposits continued during both the early Middle Archaic and Mt. Taylor periods at Silver Glen Springs and at least at two locations along the St. Johns River during the early Middle Archaic period.

CHAPTER 1

INTRODUCTION

The emergence of shell mounds along the St. Johns River has been a subject of many debates regarding Archaic environmental conditions, hunter-gatherer land use, and social complexity in the North American southeast (Bailey 1978; Cumbaa 1976; Erlandson 2001; Kennedy 2005; Russo et al 1992). In the southeastern USA, the rise of shell mound construction by hunter-gatherers during the Middle Archaic has been linked by some to environmental transitions (Miller 1992). Beginning around 7400 calibrated years before present (cal BP), during the Mt. Taylor period, communities exploited shellfish and other aquatic resources both for subsistence and to construct large shell mounds (Randall 2015, Wheeler et al. 2000). The purpose of this thesis is two-fold. First, I challenge assertions that the beginning of shell mound construction was entirely due to environmental change. Secondly, I explain the rise of shell mound construction as part of a suite of placemaking traditions that persisted through both the early Middle Archaic and Mt. Taylor periods in northeast Florida.

Specifically, I use this thesis to examine the contents of three pit deposits dating to the early Middle Archaic period from the site of Silver Glen Springs, located at Lake George along the St. Johns River, Florida (Figure 1-1). These pit deposits predate shell mound construction at the site, and coincide with the early Middle Archaic use of Windover, a burial site also located in northeastern Florida which is known for its exceptional preservation of organic materials such as wood, fabrics, and botanicals (Figure 1-1). The pits I analyze in my thesis represent the only currently known evidence of terrestrial deposits containing non-mortuary material by early Middle

Archaic populations. I show that the evidence from Silver Glen Springs and Windover firmly places the establishment of riverine, shellfish supporting environments at least one thousand years prior to the beginning of shell mound construction during the Mt. Taylor period. I also show that at Silver Glen Springs, early Middle Archaic populations utilized these environments to support a riverine subsistence economy as early as 8500 cal BP. Using these three pit deposits dating between approximately 8500–6900 cal BP, I detail in this thesis the exploited species found within each pit. I examine the implications of species composition and diversity on the types of environmental changes, human selection of species, subsistence economy, and seasonality of the early Middle Archaic populations at Silver Glen Springs.

In addition to my analysis of early Middle Archaic period environments, I also examine several lines of continuity between both the early Middle Archaic and Mt. Taylor Periods. I compare the results of my faunal analysis of the three early Middle Archaic pit deposits with two analyses of subsequent deposits at Silver Glen Springs (Blessing 2011 and Stanton 1995) to assess the degree of similarity in the subsistence practices and types of faunal deposits between the two periods. I suggest in this thesis that repeated depositional acts appear to have been the backbone of placemaking activities throughout both the early Middle Archaic and Mt. Taylor periods. To do this, I emphasize the similarities between the early Middle Archaic deposits at both Silver Glen Springs and Windover, and between the early Middle Archaic and Mt. Taylor deposits at Silver Glen Springs. In sum, I find evidence that suggests that the repeated creation of specific, consistent types of deposits persisted through both periods at Silver Glen Springs and at least at two locations along the St. Johns River during the Early

Middle Archaic. I argue that this evidence suggests that there was a gradual change in practices between the early Middle Archaic and Mt. Taylor periods where later traditions referenced earlier ones. My results support interpretations that emphasize the presence of long-term group histories amongst the early Middle Archaic and Mt. Taylor populations of northeast Florida.

I lay out the history of archaeological subsistence research in Chapter 2, beginning broadly with model-based frameworks and traditional perspectives of hunting and gathering populations, and examine the effects that research in both the Southeastern United States and the St. Johns River region have had on contemporary perspectives. I also examine how placemaking, that is, repeated depositional acts which reference earlier depositional activities, allowed Archaic St. Johns River populations to preserve a degree of continuity between the early Middle Archaic and Mt. Taylor periods. In Chapter 3, I provide an archaeological chronology of the St. Johns River region. After describing the Paleoindian period, I discuss the accepted culture history and chronological divisions of the Archaic period. I describe some of the typical characteristics of each cultural period to contextualize the early Middle Archaic period within a broader framework of regional change. I divide Chapter 4 into two parts. First, I detail the modern-day geology, hydromorphology, and climate of the St. Johns River and the current ecology found at Silver Glen Springs. I then detail what is currently

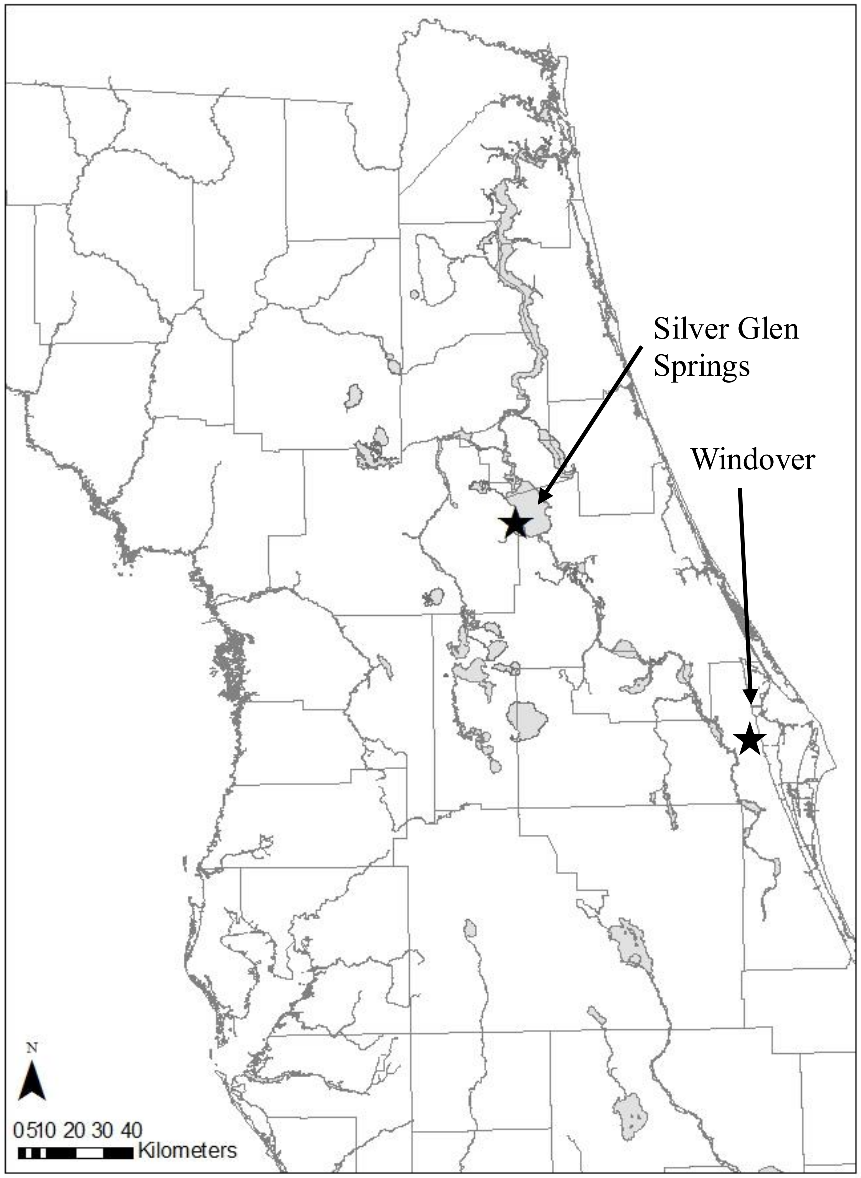

Figure 1-1. Location of Silver Glen Springs and Windover, Florida

known of the St. Johns River paleoclimate, including the climate's effect on sea level, spring activity, and paleoecology. I use Chapter 5 to detail the Silver Glen Springs site, including a detailed summary of each of the contexts analyzed for this thesis. My methods are outlined in Chapter 6, which I have divided into the recovery methods used in retrieving the analyzed sample and my analysis methods. I present the results of my primary zooarchaeological analysis in Chapter 7, and provide a faunal inventory of the total number of specimens, burnt or modified specimens, and weathered specimens for each of the analyzed deposits. I expand into my secondary analyses in Chapter 8 and examine the implications the data have on the paleoenvironment at Silver Glen Springs, human selection, and seasonality. I compare the data from this thesis to Nabergall-Luis's (1990) faunal analysis from Windover to examine the similarities between the contemporaneous environments at the two sites. I also compare the data from this thesis to Blessing (2011) and Stanton's (1995) faunal analyses from Mt. Taylor contexts at Silver Glen Springs to examine any changes in both environment and subsistence economy between the early Middle Archaic and Mt. Taylor periods at Silver Glen Springs. My final secondary analysis in Chapter 8 examines the richness, diversity, and equitability from each of the deposits I analyzed, as well as those of Nabergall-Luis (1990), Blessing (2011), and Stanton (1995). I use Chapter 9 to detail what my results reveal about placemaking traditions within the St. Johns River region and conclude the results of my thesis.

CHAPTER 2

AQUATIC EXPLOITATIONS AND PLACEMAKING DURING THE SOUTHEASTERN ARCHAIC

Research by Nabergall-Luis (1990) on the Mt. Taylor period (7400–4600 cal BP) has shown that the environment around both Silver Glen Springs and the broader St. Johns River was much like that of modern day, with richly diverse riverine and lacustrine communities of plant, vertebrate, and invertebrate communities. These diverse ecological communities supported a lifeway centered around the repeated occupation and construction of large-scale shell mounds at select locations across the landscape. In this thesis, I provide additional data from the earliest occupations at Silver Glen Spring which push the establishment of modern-like, freshwater riverine environments an additional thousand years back in time, beginning at least as early as 8500 cal BP. My results in this thesis challenge commonly held notions that the beginning of shell mound construction was entirely due to environmental change along the St. Johns River. Instead, I suggest that a shell mound construction was a form of established placemaking activities already present amongst the northeast Floridian populations in the form of repeated depositional acts that reference earlier histories and traditions.

This chapter details the history of theoretical perspectives on riverine economy and repeated placemaking first amongst hunter-gather studies worldwide before examining these perspectives as they apply to the Southeastern United States and the St. Johns River, respectively. I then detail the theoretical perspective I use to interpret the results of my analysis of the faunal remains from the three analyzed pit features.

Hunter-Gatherer Studies

Researchers have traditionally defined hunter-gatherers archaeologically through a combination of characteristics. Anthropologists have understood hunter-gatherers as passively reflecting the state of the natural environment around them, adhering to a subsistence-settlement regimen of foraging and/or collecting, and gravitating towards locations which optimize their odds of survival via highly mobile lifeways (e.g., Binford 1968). Egalitarianism, another defining characteristic of some hunter-gatherers, is directly related to increased group success within foraging/collecting subsistence-settlement regimens (Venkataraman et al. 2016). Here I argue that analytical models that characterize hunting and gathering groups according to their perceived adherence to these subsistence systems has constrained studies of these groups and limited the analytical value of anthropological research in this area.

The traditional subsistence-based understanding of hunting and gathering populations is most apparent through behavioral or evolutionary ecological models, typically used to understand hunter-gatherer behaviors (e.g., Lee and Daly 1999; Winterhalder 1981). The distribution and availability of resources within an environment constrain and define hunter-gatherer activities within these models (Randall 2015). Such models frame the landscape as a series of habitats or patches from which hunter-gatherer groups pull resources (Kennedy 2005). The amount pulled from these resources or how these resources are used is, according to an evolutionary perspective, optimized to provide the maximum amount of benefit for a population. Behavioral ecological models use mathematics to calculate the optimal behavioral strategy for a given population according to resources present in their surrounding environment (Kennedy 2005). These models posit that mobility patterns, settlement choice, social interaction, and other behaviors or strategies can be predicted according to a series of weighted variables.

Behavioral or evolutionary ecological models make several assumptions regarding what "optimization" implies. Often, in models that focus on the types of selective food choices a population will make, there is an implicit understanding that higher value is placed on species which provide the most amount of resources per individual (Kennedy 2005). One such example is the diet breadth model. According to the diet breadth model, foragers will preferentially target easily accessible large game, and only with increasing dietary stress will a forager begin to broaden their diet to include foods requiring intensive processing or foods located at a greater distance (Hawkes et al. 1982; Kennedy 2005).

Increasingly, data has been recovered which changes our understanding of what constitutes a 'hunter-gatherer'. Previously, optimization models understood aquatic resources, especially shellfish, to be 'marginal' resources; that is, these resources are high in procurement effort and low in nutritional gain and as such are only targeted during periods of increased resource stress (Bailey 1978; Erlandson 2001; Kennedy 2005). Through their research of such groups as the Pacific Northwest Coast populations and the Calusa, Donald (1984) and Marquardt (1988) countered this way of thinking by suggesting that aquatic resources were plentiful, easily harvested, and able to support large populations (aka veritable "Gardens of Eden") (Erlandson 2001).

Some flaws exist within optimization models. First, they do not necessarily consider those groups that have additional, possibly alternative, social explanations for their selection and use of certain places within a landscape. Researchers have responded to concerns regarding the usefulness of optimization models in several ways. To broaden the definition of 'hunter-gatherer' and include the variety present within hunter-gatherer populations, some researchers have amended the definition to include both 'simple' and 'complex' groups (Price and Brown 1985). 'Complex' hunter-gatherer populations, in these cases, may show evidence of sedentism, ranked social organization, and/or small-scale land management. Other researchers have challenged both the necessity of such broad definitions and the need for universal models to predict hunter-gatherer behavior. Instead, these researchers have argued that predictive behavioral models do not fully consider the complex, historical circumstances within which a group makes its decisions (Lee and Daly 1999; Gilmore 2014). Researchers such as Gilmore (2014) posit that cultural change is not solely the result of external adaptive pressures and that hunting and gathering populations instead oriented their activities toward long-term goals. Past experiences and memories formulated these goals and the methods used to achieve them. Understanding hunting and gathering groups as having 'historical consciousness,' that is, being conscientious of their own histories, allows researchers to understand the behaviors of groups, including subsistence choices, within their own unique historical trajectories (Sassaman 2010).

Effects of Research in the Southeastern United States

The Southeastern United States has and continues to challenge traditional methods and models of hunter-gatherer research through the ever-increasing discovery of Archaic populations that do not conform to traditional expectations of hunting and gathering peoples. The Southeast is home to widespread phenomenon known as the

Shell Mound Archaic. The Shell Mound Archaic (SMA) is characterized by the relatively sudden, widespread onset of shell mound construction throughout the Southeastern United States at around 8900 cal BP. Shell mound construction primarily focused within two major areas: the Ohio River Valley and the St. Johns River, but also occurred along the Atlantic and Gulf coasts (Claassen 2010; Randall 2015; Saunders and Russo 2011). While SMA sites in the Ohio River Valley include ephemeral campsites and rock shelters, most investigations in this region have focused on riverside mounds (Marquardt and Watson 2005). These mounds are generally round or elliptical, exist in a variety of sizes, parallel bodies of water, and can be comprised of shell, sand, or other inorganic matrices (Marquardt and Watson 2005). Archaic peoples seasonally occupied the Ohio River Valley mounds and subsisted on a broad-spectrum diet composed of fish, turtles, small terrestrial mammals, and deer (Marquardt and Watson 2005). Multiple mounds across the Ohio River Valley have been found to contain both human and canine burials, often alongside burial goods such as pendants, atlatl weights, and carved shell (Claassen 2010, Marquardt and Watson 2005). Aside from the mounds themselves and associated food processing pits, archaeologists have found very little evidence for permanent settlements in the region (Marquardt and Watson 2005).

Researchers have documented shell mounds in a variety of shapes along the St. Johns River, including linear, “U”-shaped, and multi-mound complexes. While no canine burials have been documented along the St. Johns River, certain mounds were used by Archaic populations as human mortuaries. Much like in the Ohio River Valley, populations along the St. Johns River were seasonally sedentary and had a similar diet. Towards the end of the Archaic period, populations began constructing shell-bearing residential sites proximate to mounds (Gilmore 2014). Along the Atlantic and Gulf Coasts, shell mounds were primarily circular or semicircular shell ring structures. While researchers have found some permanent occupations at a handful of late Archaic shell ring sites in this area, they generally understand the Archaic populations in this area to be seasonally mobile (Russo 2002). Shell rings in this area do not appear to have been used as formal burial mounds in the same manner as shell mounds found in the Ohio River Valley and St. Johns River regions (Russo 2002).

Within the framework of an evolutionary model, researchers have viewed the SMA as a relatively anomalous series of events (Sassaman 2010). This focuses on questions like: how did the SMA fit into broader discussions of the evolutionary trajectory towards sedentism, agriculture, and social differentiation? Researchers have taken various approaches to answer this question. Some researchers have continued using an evolutionary/behavioral ecological model to interpret the SMA, suggesting that the extinction of megafauna, the onset of new riverine environments, and increased population pressure led to a shift towards a broad-spectrum diet and Archaic populations increasingly targeting shellfish (Erlandson 2001). Archaic populations used these new riverine environments, which could sustain large populations of shellfish, in an opportunistic manner following the behavioral models set forth by Binford (1968), Hawkes et al. (1982), and others (e.g. Brown and Vierra 1983; Custer 1989).

Using these models, researchers have interpreted shell mounds as the gradual accumulation or byproduct of subsistence refuse created by mobile populations over very long periods of time (e.g., Milner and Jefferies 1998). Researchers have used several characteristics of shell mounds including ceramics, tools, living areas indicated by crushed shell, and pits filled with food refuse to indicate domestic rather than ceremonial land use (Russo 2004). Marquardt (2010) has particularly supported this view, arguing that shell mounds are more likely than not the product of domestic refuse disposal practices. Within this perspective, behaviors regarding shell mound construction are seen to always be the result of optimization; mounds are predicted to always be located adjacent to areas of high shellfish production, processing should happen on or around the mounds, and shell accumulation is always the result of processing or habitation refuse (May 2005). Intra-mound height variation is explained as the result of different activity areas (May 2005).

However, shell mound construction occurred at relatively few locations in comparison to the number of places at which shellfish would have been plentiful (Claassen 1996). This suggests that behavioral optimization was not the dominant guiding principle behind shell mound construction and instead, social factors rather than environmental factors influenced the placement of shell mounds upon the Archaic-period landscape. For example, Sassaman (2010) has argued that while 'public resources of ritual performance' such as monuments or cemeteries have traditionally been associated with 'complex,' sedentary, and stratified societies, increasing evidence from around the world proves that hunting and gathering populations constructed and actively participated in such public resources. Many researchers have argued that the shell mounds of the SMA were such public resources, used specifically for ceremonial purposes (e.g., Claassen 2010; Russo 2004; Saunders 2004). Russo (2004) challenged the interpretation of shell rings as egalitarian structures, arguing that height differences within each shell ring corresponded to the asymmetrical social relations of participants as they arranged themselves on the mound. Russo (2004), Claassen (2010), and Saunders (2004) have also argued that large-scale feasts are a plausible explanation for the rapid accumulation of shell at mound areas. Regardless of the social processes by which these researchers interpret shell mounds, all agree that shell mounds were large-scale public resources at or upon which Archaic populations interacted.

Claassen (2010) has put forth some of the most divisive but intriguing interpretations regarding shell mounds in the past decade. She has highlighted several lines of evidence which support an interpretation of shell mounds as ritual monuments. Among these, she cites the high proportion of human burials within shell mounds and the presence of many burials with indications that the individual interred within suffered a violent death. In addition, she argues that many shell mounds appear to have had a founding or initial burial that was particularly violent, or which had a greater proportion of rich burial goods. Claassen (2010) then connects shell mounds with several possible renewal rites, and places importance on the connection between the use of shell with water and the underworld.

Effects of Research in the St. Johns River Region

Conclusions drawn from studies of the Shell Mound Archaic have greatly affected studies of Archaic groups along the St. Johns River. This section focuses on two areas of research in which interpretations have been rapidly evolving over the past couple of decades: the establishment of riverine economy in the St. Johns River region and the social explanations that have been provided to explain the beginning of shell mound construction. Recent developments have highlighted the increasing importance of shellfish, and I detail in this section how these analyses have pushed our understanding of the adoption of riverine subsistence economies along the St. Johns River further back in time. These new dates for the establishment of riverine economies have reinvigorated research into the causative agents behind the beginning of shell mound construction. To summarize some of this research, I outline several shell mound characteristics from within the St. Johns River region including mortuary activities and capping layers which may indicate a social impetus behind shell mounds. I then discuss how placemaking traditions were evident throughout the Middle Archaic and tied the practices of the early Middle Archaic with that of the Mt. Taylor period.

Older interpretations for the St. Johns River area maintain many of the principles proposed by traditional hunter-gatherer dietary models. Cumbaa (1976) and Milanich and Fairbanks (1980) have interpreted St. Johns River shell mounds within the context of the accumulation of food refuse, suggesting that mound sites were both optimally located next to prime shellfish producing areas and seasonally abandoned for alternate subsistence resources as proximate shellfish populations were depleted. In these models, shellfish are viewed only as a supplement to terrestrial animal and plant resources (Russo et al. 1992). According to Cumbaa (1976), both deer and shellfish were a less important subsistence resource than wild plants, while fish made up only a small fraction of Archaic subsistence.

More recent dietary analyses have disproven Cumbaa's (1976) results regarding the subsistence patterns of Archaic St. Johns River populations and have shown that Archaic populations primarily focused on aquatic resources. In addition, studies have also shown that the importance of riverine resources continued throughout the early Middle to Late Archaic. Russo et al. (1992) and Wheeler and McGee (1994b), in their analysis of Grove's Orange Midden, and Blessing (2011) in her analysis of Silver Glen Springs, identified faunal patterns suggesting that aquatic resources such as fish and shellfish were very important to diet in the Late Archaic. Quitmyer' (2001) analysis of Lake Monroe Outlet Midden, Quinn et al. (2008)'s analysis of Harris Creek, and Blessing's (2011) analysis of Silver Glen Springs have found similar patterns of aquatic subsistence during the Middle Archaic, identified through both the faunal and isotopic record. Their research on the Middle Archaic shows that populations placed equal dietary importance on both shellfish and aquatic resources such as fish. Isotopic and faunal research from the site of Windover by Tuross et al. (1994) and Tucker (2009) have further pushed the establishment of riverine subsistence into the early Middle Archaic. However, isotopic data recovered by Tucker (2009) indicates that early Middle Archaic populations were not targeting substantial amounts of shellfish, and were instead focused on marine/estuarine fish. The data provided by these authors highlight that a riverine subsistence focus was in place from the beginning of the early Middle Archaic and continued through to at least the beginning of the Woodland Period. Their data also indicates that Archaic populations appear to have consumed shellfish in greater quantities after the advent of shell mound construction in the Middle Archaic.

While these data appear to support the interpretation that shell mounds are simply the result of the accumulation of food refuse, research along the St. Johns River have shown otherwise. The advent of shell mound construction has always been closely linked to environmental reconstruction studies, with the assumption that the sudden onset of shell mound construction was directly linked to the advent of new environments which could sustain large populations of shellfish (Miller 1992). Recent research, particularly along the St. Johns River, has revealed that the impetus for shell mound construction may not have its roots in environmental change, and new evidence, including what I present in this thesis, shows that habitats able to support shellfish were already in place a minimum of one millennium before the beginning of shell mound construction.

Much of the research which claims a link between shell mound construction and environmental change is based on older models which link rising sea levels with the establishment of riverine environments in the Florida interior. Miller (1992) has posited a direct relationship between rising global sea levels and the emergence of springs approximately 5600 years ago across the St. Johns River region. Early archaeological evidence appeared to support this theory. Clausen and colleagues (1979), for instance, used archaeobotanical evidence to suggest that water levels at Little Salt Spring reached near modern-day levels at approximately 8500 years ago. Researchers have used this theory to suggest that intensive shell-fishing began because of new riverine environments able to support copious quantities of shellfish (e.g. Milanich and Fairbanks 1980). Several authors have contradicted these conclusions. O'Donoughue (2015) has determined that shell mound construction began significantly later than the onset of spring flow in many areas of the St. Johns River. The earliest known shell mounds, Live Oak (8VO41) and Hontoon Dead Creek (8VO214), are both located proximate to marshes, rather than springs (O'Donoughue 2015). As a result, the onset of spring activity would not have dramatically affected the wetlands around these two sites.

The absence of a causative link between the onset of new riverine environments and the beginning of shell mound construction has encouraged researchers to identify social explanations for the inception of shell mound construction. This said, social explanations can complement environmental explanations and the early Middle Archaic was certainly a period of environmental change (O'Donoughue 2015). The beginning of shell mound construction may have occurred as a social response to environmental changes. Randall (2015: 86) has suggested that monuments may have provided a space for working through disruptions or tensions caused by the environment. Writing about inhabitants of the south Pacific Torres Straits, McNiven (2013) posits that populations involve themselves in a dialogue with place through the ritualized deposition of materials. While the meaning behind the beginning of shell mound construction may not be known to researchers, their construction as a social response to environmental change is a possible explanation for the changes of site types in the Middle Archaic.

Some interpretations have used shell or sand burial mounds as evidence that the mounds along the St. Johns River were social in nature. Randall (2015: Chapter 6) argues that burial mounds brought people together to engage in feasting and ritualized deposition. The St. Johns River burial mounds certainly appear to follow some trends like those documented from the broader Shell Mound Archaic. Claassen (2010) has posited that shell burial mounds in the Ohio River Valley appear to have a 'founding' or initial burial/group of burials which appears more violent than subsequent burials. Aten (1999) has documented a similar pattern at the site of Harris Creek (8VO81), where the deepest identified burial contains at least 11 individuals. This burial has a unique organization, with isolated skeletal elements of three individuals, including one child, at the base of the deposit. Archaic populations covered these individuals with a layer of white sand, upon which 8 flexed individuals were placed (Aten 1999). Subsequent group burials and burials with individuals missing or composed entirely of isolated skeletal elements appear to have been focused around this initial deposit. The mortuary practices at Harris Creek suggests that at least some of Claassen's (2010) interpretations regarding the social importance of shell mounds may also hold true in the St. Johns River region.

Drawing on McNiven (2013), obvious capping layers at shell mounds may represent a dialogue that Middle Archaic populations undertook with certain locations, ending previous relationships with the landscape and opening new spaces for future use. Shell mound construction at some early shell ridges, such as Hontoon Dead Creek, began as several small, shallow nodes which, after a period, were 'capped' by Archaic peoples with a platform of shell approximately two meters thick. While subsequent shell mound construction reproduced the layout of the initial shell placement as linear or crescent-shaped, Sassaman and Randall (2012) have interpreted these thick capping layers as symbolically marking a transition in the function of the site (Randall 2013; Gilmore 2014). A change in the types of artifacts found at both sites after the capping events supports this interpretation (Gilmore 2014). A similar capping event occurred at Silver Glen Springs, where a series of pit deposits dating to the early Middle Archaic were covered with a layer of sand prior to the subsequent construction of a shell mound at the location. Such capping events highlight the intentionality behind shell mound construction, and further serve to challenge the 'mounds as middens' interpretations held by researchers such as Marquardt (2010).

Other archaeologists have focused on the importance of social memory and placemaking, in the form of repeated depositional acts that reference earlier histories and traditions, in the construction and inhabitation of shell mounds. Randall (2015), for example, argues that the ways that communities inhabit a certain place is informed by history and tradition. During the Mt. Taylor Period, a span of approximately three thousand years (7400–4600 cal BP), sites were repeatedly constructed either referencing earlier sites or built on top of preexisting locations that had histories. Repeated acts of placemaking were a familiar tradition by the beginning of Mt. Taylor period. People repeatedly returned to the early Middle Archaic pond site of Windover (8BR246) for over a thousand years (9000–7900 cal BP) to inter deceased individuals. A set of mortuary traditions were adhered to throughout the history of the site, despite the long duration of its use, including the use of wooden stakes and woven blankets to fasten individuals to the base of the pond (Doran et al. 2002).

The beginning of shell mound construction during the Mt. Taylor period could be viewed as a rupture between the practices of the early Middle Archaic and subsequent periods. To explain this rupture, researchers have suggested the environment as a causative agent for the changes visible in the archaeological record (e.g. Miller 1992). Others (e.g. Aten 1999; McGoun 1993; Sassaman 2010, 2012) have suggested that the symbolic association between submerged burials and burials within shell mounds, created from aquatic creatures, maintains continuity between the practices of the two periods. Other lines of evidence supporting continuity between the early Middle Archaic and the Mt. Taylor period exist. This thesis provides evidence that during the period of use at Windover, early Middle Archaic populations were also repeatedly reoccupying at least one other location along the St. Johns River, at the Silver Glen Spring site. Emphasizing the continuity between the early Middle Archaic and the Mt. Taylor period, initial mound construction at Silver Glen Springs took place directly above the early Middle Archaic deposits at the site.

Similar perceived "ruptures" also occurred within the Mt. Taylor period. As mentioned previously, shell mound construction at some early Mt. Taylor shell ridges, began as small, shallow nodes which were subsequently capped. Sassaman and Randall (2012) have viewed these capping activities and the associated change in artifact types as a way in which Archaic populations symbolically marked a transition in the function of the site (Gilmore 2014). Despite this "rupture," however, subsequent shell mound construction reproduced the layout of the initial shell placement as linear or crescent-shaped mounds (Gilmore 2014; Randall 2013)

The construction sequences at these mounds highlight that despite changes in form, Mt. Taylor mound construction occurred on top of preexisting locations in ways that referenced earlier depositional activities. As such, placemaking appears to have been at least one strand of continuity which tied the practices of the Middle Archaic together. The changes in site types during the Middle Archaic, within this view, suggests a continuity of practices, rather than rupture.

The existing body of research for the St. Johns River region suggests that placemaking traditions were adhered to through an established series of practices involving depositional activities. How people related to or understood certain locations governed the appearance of depositional activities influenced by a sense of both collective or group histories (Randall 2017, personal communication).

Implications

Placemaking is a key component in landscape archaeology. To understand placemaking researchers must identify how environmental factors and regional, traditional land use practices interacted and impacted the decisions of past populations in how they made place. With the findings of this thesis I suggest that people repeatedly returned to at least two locations during the early Middle Archaic, Silver Glen Springs and Windover, and used depositional practices that appear to have been rooted in longstanding tradition. Similar trends in repetitive depositional practices are also found throughout the Mt. Taylor period.

The data I provide in this thesis does not preclude any interpretation which argues that Middle Archaic populations selected or continued to use locations based on principles of subsistence optimization. However, the similarities and parallels in patterns found between both the early Middle Archaic at the Mt. Taylor period and within the Mt. Taylor period appear to suggest that social factors, including group history or communal memory, governed how locations were renewed or used. I propose that the Middle Archaic St. Johns River populations made use of placemaking as a longstanding method reproducing group histories.

The monumental nature of many shell mounds during the Mt. Taylor period highlights that Middle Archaic populations during that period were heavily invested in reproducing group histories. These populations maintained and added shell mounds at a large, very visible scale. The depositional activities at Silver Glen Springs and Windover were, of course, considerably less visible in comparison. However, regardless of the type of location, the way in which Archaic populations practiced deposition allows researchers to understand how people related to and understood that location from a sense of history (Randall 2015).

The three pit deposits that I have analyzed for this thesis allow me to make inferences regarding the forms placemaking took during the early Middle Archaic. To better understand this, I look at the types of selection present within each pit deposit. This includes the species selection practices that appeared to have been in place, and the treatment of certain species. In addition, I use faunal data to reconstruct the environment as it was during the creation of each pit deposit to understand why Silver Glen Springs may have been selected as a place of habitation.

While this thesis does not attempt to provide a concrete explanation for the impetus behind Mt. Taylor shell mound construction, I do suggest that whatever impetus that existed was likely not solely environmental. In this thesis, I focus instead on positing that there was at least a degree of continuity between the St. Johns River populations of the early Middle Archaic and Mt. Taylor period in the form of traditional placemaking practices. I use this thesis to identify the types of placemaking practices that were in place at Silver Glen Springs during the early Middle Archaic period, with the assumption that the shell mounds of the Mt. Taylor period were a new form of placemaking traditions that had been in place since at least the beginning of the early Middle Archaic.

CHAPTER 3

CURRENT RESEARCH ON THE ARCHAEOLOGY OF THE ST. JOHNS RIVER REGION

This chapter examines the cultural chronology of the St. Johns River basin in Florida. The chronology I've provided here gives a summary regarding the lifeways characteristic of the Paleoindian period to help contextualize the subsequent Archaic period. I then discuss the Archaic period in Florida with emphasis on the early Middle Archaic and Mt. Taylor Periods, followed by a brief description of the subsequent Late Archaic Orange period (Figure 2-1).

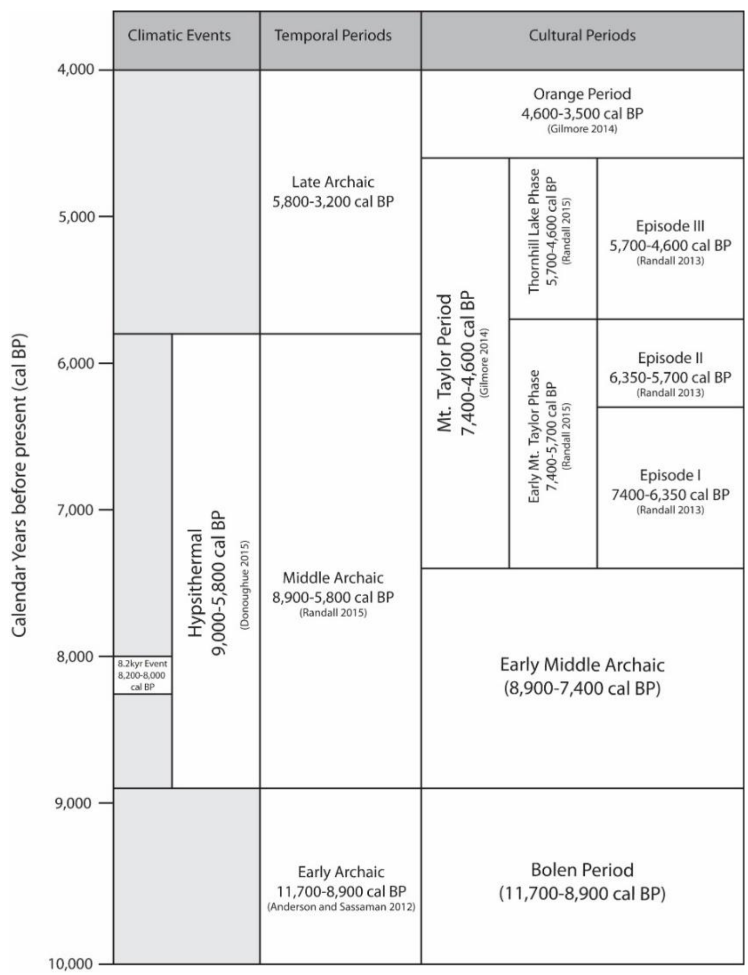

Figure 2-1. Chronology of the Archaic Period for the St. Johns River Region

Paleoindian Period

During the Paleoindian era, sea level was as much as 95 meters below modern, and much of what is now Florida was quite arid. Paleoindian sites are clustered in the Big Bend region of Florida, and along some waterways such as the St. Johns River to the east and south of the Big Bend. While sea-level rise has obliterated or submerged many Paleoindian sites (13,500–11,700 cal BP), the discovery of several inundated sites such as Page-Ladson (8JE591) in northwestern Florida and Lake George Point (8PU1470) along the St. Johns River have allowed researchers to make some inferences about this early period (Carter and Dunbar 2006; Thulman 2012). Data from the Paleoindian period comes from isolated lithic finds throughout Florida, and formal excavations of terrestrial and submerged sites, particularly in the Big Bend region of the state. Due to a lack of well-preserved stratified alluvial deposits, the precise chronology of the Paleoindian period in Florida is not well understood. It is thought, however, that there is a pre-Clovis, Clovis, and post-Clovis Suwanee-Simpson period (Anderson and Sassaman 2012). Despite this, researchers have identified several aspects of Paleoindian lifeways.

The local environment around the St. Johns River during the Paleoindian Period became increasingly arid toward the end of the Paleoindian period (Dunbar 2016). Increasingly accurate climatic data from sites such as Page-Ladson show that a series of climatic shifts between arid and moist led up to the extinction of megafauna at the end of the Clovis period (Carter and Dunbar 2006; Dunbar 2016; Randall and Sassaman 2017). Researchers have suggested that Florida Paleoindian populations did not follow megafauna across the broader Southeastern region and instead hunted these species locally, an inference which runs counter to traditionally-held models of hunter-gatherer lifeways (Carter and Dunbar 2006; Hoppe et al. 1999).

Investigators have found megafaunal remains at a variety of Florida Paleoindian sites, including the Page-Ladson sinkhole site (8JE591) and the Lake George Point site (8PU1470) (Thulman 2012; Webb 2006). Investigators have also found bone and ivory shafts created from megafaunal remains at the Sloth Hole Clovis Site (8JE121) along the Aucilla River in northwestern Florida (Carter and Dunbar 2006).

Paleoindian lithic tools have been found both in proximity with now-extinct megafauna and in direct contact with megafaunal remains, suggesting at least some interaction with the large game throughout Florida (Thulman 2009). Paleoindian populations primarily created lithic tools from Florida chert outcrops located in the central and northwestern part of Florida, near the Aucilla River (Austin and Estabrook 2000).

Most Paleoindian sites are located near springs or persistent waterways, and in areas with easily accessible tool stone (Dunbar 2016). Paleoindian sites are generally underrepresented in both east and south Florida. Several Paleoindian sites are located along St. Johns River in northeastern Florida; one such site is Lake George Point (8PU1470), located on Lake George (Thulman 2012). The presence of chert from northwestern Florida at sites along the St. Johns River (approximately 100 kilometers away) suggests that Paleoindian populations moved throughout Florida and concentrated on sources of water (Thulman 2009). Toolkits were composed of a variety of lanceolate bifaces, as well as bone and ivory tools (Carter and Dunbar 2006).

Archaic Period

Researchers have divided the Archaic period in Florida into three sub-periods: Early (11,700–8900 cal BP), Middle (8900–5800 cal BP), and Late (5800–3200 cal BP). In the study region they are further divided into sub-periods and cultural phases. The Middle Archaic is divided into a poorly defined early Middle Archaic period (8900–7400 cal BP) and the Mt. Taylor Period (7400–4600 cal BP). The Mt. Taylor period continues into the Late Archaic. Researchers have proposed several distinct phases for the Mt. Taylor Period, and these will be discussed in detail (Endonino 2010; Randall 2013). The Orange Period (4600–3500 cal BP) makes up the latter portion of the Late Archaic Period and the first few centuries of the Woodland Period, ca. 3500–2500 cal BP. This section briefly discusses the Early Archaic, then focuses on the early Middle Archaic and the Mt. Taylor Period before concluding with a brief discussion of the Orange Period.

The Early Archaic (11,700–8900 cal BP)

The end of the Younger Dryas marks the beginning of the Early Archaic period and the start of the Holocene era at 11,700 cal BP. Sea levels had significantly risen by 12,000 cal BP, and researchers believe that there was a corresponding increase in both spring activity and intensity, which may have affected the species diversity and abundance in Florida (Clausen et al. 1979; Donoghue 2011). Early Archaic sites are more abundant than Paleoindian sites, and are also found in submerged and terrestrial contexts (Randall 2017, personal communication)

Researchers know little about subsistence during the Early Archaic. It is presumed that they were mobile and emphasized terrestrial game. There is no evidence for Early Archaic shellfish exploitation. However, a new series of lithic points began to circulate throughout Florida, which may indicate that the Florida populations responded to the megafaunal extinction and climatic changes by diversifying their toolkits. A transition away from lanceolate lithic tool forms to side- and corner-notched biface forms traditionally marks the archaeological separation between the Paleoindian and Archaic periods (Anderson and Sassaman 2012; Carter and Dunbar 2006; Faught and Waggoner 2012). Side-notched points, called Bolen points were introduced and in use between 11,450–10,950 cal BP. These were replaced by lithic tool tradition called Kirk Corner-Notched (11,010–9900 cal BP) (Carter and Dunbar 2006; Thulman 2017).

The Middle Archaic (8900–5800 cal BP)

The Middle Archaic is divided into two periods according to changes in material culture. The early Middle Archaic (8900–7400 cal BP) begins after the end of the Early Archaic period and lasts until the beginning of shell mound construction that defines the Mt. Taylor Period (7400–4600 cal BP). The Mt. Taylor Period continues into the Late Archaic (which begins at 5800 cal BP), and is subsequently replaced by the Orange period (4600–3500 cal BP).

The Early Middle Archaic (8900–7400 cal BP)

The early Middle Archaic marks the beginning of the Middle Archaic and immediately precedes the Mt. Taylor Period (7400–4600 cal BP). Chronologically, the early Middle Archaic roughly coincides with the start of the Hypsithermal (9000–5800 cal BP), a period of accelerated global climatic warming.

Prior to the discovery of the Locus A early component at Silver Glen Springs, there were no known terrestrial sites of this age. Most of the data regarding the early

Middle Archaic comes from the site of Windover (8BR246), which dates between 9000–7900 cal BP. While Doran et al. (2002) initially assigned Windover to the Early Archaic Period, and other publications followed suit (Tucker 2009), better chronological characterizations by Randall (2015), Anderson and Sassaman (2012), and Gilmore (2014) have re-characterized Windover as dating to the early Middle Archaic. I follow the recharacterizations by Randall and others in my discussion of Windover in this thesis.

Windover is a burial pond. That is, it is a shallow body of water containing over 150 burials and associated artifacts in an excellent state of preservation. While no known subsistence-related faunal data is available from the early Middle Archaic, researchers have been able to make some inferences regarding early Middle Archaic diet through isotopic analyses. In addition, Windover has provided significant amounts of data regarding early Middle Archaic technology, land use patterns, and seasonal migration. Tucker (2009) has used isotopes from the dental enamel of the Windover population to determine that the primary subsistence focus of the population was on marine/estuarine fish. Tuross et al (1994) have also used isotopic analysis to suggest that the Windover population was dependent on riverine species such as duck, turtle, and catfish. Certainly, the environmental data from Windover suggests that the pond itself had diverse riverine resources. In a column sample, at least 18 types of naturally deposited fish were identified alongside frogs, sirens, turtles, and snakes (Nabergall-Luis 1990).

The absence of any as-of-yet discovered non-perishable fishhooks and the discovery of textiles surrounding some of the Windover burials indicates that these fish resources were likely obtained with nets, traps, and weirs (Doran 2002). In addition to these perishable technologies, early Middle Archaic populations would have a variety of stemmed lithic points associated with atlatl technology, including local variations of the Kirk Stemmed type (Thulman 2017; Randall 2015; Bullen 1975).

Except for Locus A, no known settlements dating to the early Middle Archaic have been discovered thus far. However, isotopic data has indicated that Windover populations seasonally traveled within Florida, spending summers along the coasts and winters in the interior (Tucker 2009). The seasonal use of coastal resources has been identified in later Mt. Taylor contexts. These data indicate that the early Middle Archaic populations were seasonally mobile. Archaeobotanical and dendrochronological evidence suggests that Windover was primarily used in the late summer/early fall (Newsom 2002). In addition, bioarchaeological data on preserved brain tissues has indicated that individuals buried within the Windover pond were rapidly buried within 48 hours of their death and most of the burials appear to have been primary (Purdy 1993).

The discovery of Windover, a burial pond, has allowed for some inferences regarding land use by early Middle Archaic populations. First, the choice of burying their dead within bodies of water may indicate some symbolic associations between death and water. A handful of researchers (e.g. Aten 1999; McGoun 1993; Sassaman 2010, 2012) have examined these symbolic connections. A handful of other pond burial sites have also been discovered throughout Florida, including the Bay West site in southwest Florida (6630–6520 BP), Little Salt Springs (6800–5220 BP) and Republic Grove in west-central Florida (6430–5745 BP) (Beriault et al. 1981; Clausen et al.

1979; Wharton et al. 1981). Why certain ponds were selected to become burial ponds is still uncertain, and research has been hampered by the difficulty in discovering additional sites.

The Mt. Taylor Period (7400–4600 cal BP)

The Mt. Taylor Period marks the beginning of intensive shell-fishing along the St. Johns River and the start of shell-mound construction (Wheeler et al. 2000). Along the St. Johns River, shell mounds were created using shells from gastropods and bivalves. These include shells from the banded mystery snail (*Viviparus georgianus*), Florida apple snail (*Pomacea paludosa*) and a variety of freshwater clams (Unionidae), all of which are believed to have been collected directly from the St. Johns River and its tributaries (Randall 2015).

The visibility of shell mounds has allowed for significantly more research on the Mt. Taylor period in comparison to the early Middle Archaic. Significantly more faunal data has been recovered, and the individuals buried in several burial mounds have provided isotopic data supporting the results of faunal analyses.

Tucker (2009) has argued that based on isotopic data that there was no major shift in subsistence resources between the early Middle and Mt. Taylor periods. This appears to be supported by faunal evidence from several Mt. Taylor sites, which indicates that by the Mt. Taylor period, Floridians had a well-established riverine diet composed of near-shore aquatic species. Blessing (2011) and Stanton (1995) both detail riverine diets comprised of fish from the family Centrarchidae, including sunfish and largemouth bass, catfish, gar, and bowfin. This was supplemented by reptiles such as turtle, snake, and alligator, birds such as turkey and duck, and mammals such as white-tailed deer, otter, raccoon, opossum, and rabbit (Blessing 2011; Stanton 1995).

The Archaic Floridian toolkit further diversified during the Mt. Taylor Period. The lithic resources used by Mt. Taylor populations were primarily composed of heat-treated silicified coral and chert (Randall 2015). The Newnan Horizon characterizes the beginning of the Middle Archaic Period and begins around 7000 cal BP (Randall 2015). Researchers distinguish points from this horizon as 'Florida Archaic Stemmed Bifaces,' and characterize these by a short, narrow stem and a broad blade. Archaeologists and collectors have also discovered unifacial tools throughout Mt. Taylor deposits in Florida alongside adzes, celts, decorative items like beads and plummets made of marine shell (Randall 2015). By 6300 cal BP, the Mt. Taylor population used marine shells to construct vessels that Sassaman et al. (2011) have proposed were employed in the brewing of medicinal drinks (Randall 2015).

Mt. Taylor populations also used several types of bone tools, including gouges, awls, needles, and net gauges (Byrd 2011; Wheeler and McGee 1994a). Researchers have also found wooden artifacts such as canoes, net floats, and tool handles in anaerobic contexts like the Groves' Orange Midden (8VO2601) (Wheeler and McGee 1994b). The earliest canoe found in Florida dates to 7000 cal BP and comes from De Leon Springs in Northeastern Florida (Randall 2015). Canoes from the Mt. Taylor Period were likely built from pine and were shallow, narrow, and long, and Wheeler et al. (2003) have suggested that Mt. Taylor populations used these canoes for local transportation.

Researchers have suggested that Mt. Taylor populations were seasonally mobile, and may have moved between the coast and the interior of Florida (Tucker 2009). While few domestic settlements, particularly any with permanent structures, have been found, shell mound construction progressively intensified over the course of the Mt. Taylor period. These mounds tended to be located proximate to spring or marshy areas, and were constructed through repeated depositional activities over the course of several hundred years. These shell mounds have long been a topic of discourse amongst Archaic researchers within the St. Johns River area, as they have been found to contain what appear to be domestic areas, indicated by the remnants of subsistence refuse, trampled surfaces, and areas of increased burning. Some researchers have suggested that shell mounds may have also been used for social gatherings or ritual purposes. Mortuary mounds made of shell, sand, or a combination of both also began to be constructed during the Mt. Taylor period and examples include the Harris Creek Site (8VO24) and Bluffton Burial Mound (8VO23) (Aten 1999; Sears 1960). Regardless of the purpose of the mounds, research by Tucker (2009) and Quinn et al. (2008) has shown that Mt. Taylor populations seasonally occupied the St. Johns River, and depositional activities at shell mound sites likely corresponded to seasonal movements across Florida.

Researchers have disagreed on how to exactly subdivide the Mt. Taylor period, as several distinct characteristics developed within the period over time. One phase, defined by Endonino (2010), is the Thornhill Lake Phase (5700–4600 cal BP), which marks the beginning of the Late Archaic. Characteristics occurring during this phase include the construction of sand mortuary mounds and a flourish of exchange networks, both local and long-distance. Imported objects from throughout the southeastern United States include bannerstones, stone beads, and pendants. Lithic raw material sources diversified during this period, and biface production increased. Endonino (2010) argues that outside of these developments, little else changed in the material culture and lifeways of the northeastern Floridian population, which warrants its designation as a phase of the Mt Taylor period, rather than as a separate period altogether. In addition, after the end of Thornhill Lake phase at 4600 cal BP, the construction of sand mortuary mounds ceased. (Endonino 2010)

Randall (2013) has suggested that the Mt. Taylor Period is instead divisible into three episodes: Episode I (7400–6350 cal BP), Episode II (6350–5700 cal BP), and Episode III (5700–4600 cal BP). He defines these episodes according to changes in material culture, site construction, and regional interaction (Randall 2013). Episode I (7400–6350 cal BP) marks the beginning of intensive shell-fishing along the St. Johns River at two known locations, Live Oak Mound and Hontoon Dead Creek Mound. Both sites are located within two kilometers of one another. Randall argues that shell at these sites was repeatedly placed over settlement areas in mantles, forming long shell ridges (Randall 2013).

Randall's (2013) Episode II (6350–5700 cal BP) is demarcated by the cessation of deposition at Live Oak Mound and Hontoon Dead Creek Mound. Linear shell ridge construction spread throughout the St. Johns River valley, focusing around bodies of water, particularly spring runs and wetlands and these new mounds show evidence of domestic activity. Locus A at Silver Glen Springs (8LA1), the focus of this thesis, is one such Episode II mound. Also, the first mortuary mounds begin in this period, including the Harris Creek mortuary mound.

Finally, Episode III (5700–4600 cal BP) (and co-eval with the Thornhill Lake phase) marks the end of the Middle Archaic and the beginning of the Late Archaic. It also marks the end of shell-mound construction at several Episode II sites (Randall 2013). Instead, the intensity of shell mound construction focused on a select number of sites, dramatically increasing the scale of these mounds. The shape of Episode III mounds diversified into large-scale, multi-mound complexes. The Lake Monroe Outlet Midden and a linear portion of the "U-shaped" mound at Silver Glen Springs and are two such massive Episode III mounds. Conical burial mounds were constructed near on top of existing shell mounds using brown, white, or tan sand and shell. Randall (2013) notes similar expansion and diversification in exchange networks as indicated by Endonino (2010) during Episode III.

Post Mt. Taylor: The Late Archaic Period

The Orange Period (4600–3500 cal BP)

The Orange Period picks up at the end of the Mt. Taylor period, halfway through the Late Archaic (4600–3500 cal BP). Subsistence remained like that of the Mt. Taylor period, with a focus on aquatic or riverine species. Gilmore (2014) has noted a marked decrease in material types common during the Mt. Taylor Period, mainly marine shell and lithic tools. Instead, the frequency of bone tools increased, and ceramics were introduced for the first time within Florida. This pottery, known as 'Orange' pottery, spread southward from Georgia and South Carolina and was composed of a fiber temper (Gilmore 2014). Orange pottery persisted until the end of the Orange Period at around 3500 cal BP, when Floridian populations replaced it with spicule-tempered pottery variety known as ‘St. Johns’ (Gilmore 2014).

Along the St. John’s River, all but four Mt. Taylor mounds were abandoned (Gilmore 2014). These four mounds, located at Silver Glen Springs, Harris Creek, Old Enterprise, and Orange Mound, are all approximately forty kilometers apart. Floridian populations dramatically enlarged these locations through the emplacement of massive complexes during this period. At the outlet of Silver Glen Springs into Lake George, the large “U-shaped” mound was given its final shape, building upon the original Mt. Taylor ridge. This U-shaped mound, before its destruction by modern-day shell miners, measured 8–10 meters tall and over 200 meters long (Gilmore 2014).

In contrast to the Mt. Taylor Period, none of the Orange Period shell constructions contain human remains. Instead, burials appear to have been located beneath residential areas, located separate from shell mounds (Gilmore 2014). Likewise, there was a marked decrease in exotic objects at Orange Period sites, suggesting a dramatic reorganization of long-distance networks (Gilmore 2014).

CHAPTER 4

ENVIRONMENTAL HISTORY OF THE ST. JOHNS RIVER

I have divided this section into two parts, the modern-day environment and the paleoenvironment of the St. Johns River region. I first outline the geological and hydromorphological characteristics of the St. Johns River Region, including a brief description of the mechanics behind Florida's springs. I then briefly describe the modern climate of Florida before discussing the pertinent ecological conditions surrounding Silver Glen Springs. My summary of the ecology of Silver Glen Springs includes the typical characteristics of the habitats present, the types of fauna and flora present, and any other notable characteristics like soils. I also discuss the effects that invasive species have had on the ecology in the area. In the section discussing the St. Johns River paleoenvironment, I first examine what is currently known regarding the paleoclimate of the area, followed by the effects of changing climate on both sea levels and spring activity. I conclude with a summary of the currently known research on St. Johns River region paleoecology. In this section, I show that the modern-day environment at Silver Glen Springs is highly diverse and able to support a wide variety of resident and migratory faunal populations. I also show that current research indicates that Florida's springs were likely running by 8600 cal BP and Florida's environment may have been consistent with wetter, more modern-day conditions.

Present-Day St. Johns River Environment

Geology and Hydromorphology

One of the most prominent hydrological features of Northern Florida is the St. Johns River. The St. Johns River is the longest river in Florida, with headwaters in the

St. Johns River Marsh and an outlet near Jacksonville, Florida approximately 500 km to the north (Kroening 2004). Notably, it is the largest north-flowing river in North America (Randall 2015). The St. Johns River is exceptionally shallow for its overall size and has a low gradient, only dropping around 9 meters from headwaters to outlet (Kroening 2004). Due to its morphology, the waters of the St. John's pool into a series of lakes, garnering it the nickname "River of Lakes."

The St. Johns River lies upon the Florida Platform, a flat geologic region that extends throughout a substantial portion of the Southeastern United States, encompassing the state of Florida (Beck 1986). The Florida Platform is a karst landscape composed of porous limestone. As a carbonate material subjected to the environment for millions of years the karst bedrock of Florida is permeable, and parts have dissolved, leaving behind numerous underground caverns which comprise Florida's three major aquifer systems: the Floridan, the Intermediate, and the Surficial aquifer systems (Beck 1986; Scott et al. 2004). These systems underlie Florida and portions of Georgia, Mississippi, and South Carolina and contain a large amount of freshwater (Beck 1986). This freshwater is routinely replenished by sinkholes created by weakened spots in the aquifer's surface or by diffusing through the naturally porous bedrock. Freshwater springs are created by discharge from the aquifer through solution cavities, fractures, or fault lines (Alvarez Zarikian et al. 2005; Committee on Hydrological Science 2004). These springs collectively supply a near-constant source of freshwater into the St. Johns River system. Springs have different magnitudes, which are determined by the rate of water flow per second. Florida hosts to multiple springs of varying magnitude. 1st magnitude springs have the highest water-flow, with over 2.8

cubic meters of flow per second (Florida Spring Classification System and Spring Glossary 2003). For reference, the smallest springs in Florida have a magnitude of 8, and emit less than one liter per minute (Florida Spring Classification System and Spring Glossary 2003).

Climate

Modern-day Northern Florida has a humid, subtropical climate with temperature highs ranging from an average of 22.2 degrees Celsius to 33.3 degrees Celsius throughout the year (Kroening 2004). Most rain falls during a wet season between June and September and averages approximately 127 cm a year (Kroening 2004). Severe hurricane-forming storms can occur in Florida from June to November, bringing high winds and flooding storm surges that can devastate the Florida coastline (Florida Climate Center 2017).

St. Johns River Ecology

As the longest river in Florida, the St. Johns River spans numerous ecological zones. The Silver Glen Springs site is located on Lake George, the second largest freshwater lake in Florida (Figure 1-1). The portion of the St. Johns River at this location composes the Lower St. Johns River Basin. A wide variety of habitats exist along this portion of the St. Johns River, including riverine, spring, and lake habitats. This section will focus on the types of St. Johns River habitats that exist in proximity to the Silver Glen Springs site.

Silver Glen Springs is situated in the Ocala National Forest and is located at the junction of three aquatic zones: a spring, a stream directing the discharged spring water into Lake George, and Lake George itself. Except for a few species, a preference for any of the three habitats does not preclude any faunal and floral species from occupying any of the others. In addition to these three aquatic zones, numerous terrestrial species inhabit area surrounding the spring, stream, and lake. Several terrestrial habitats surround these aquatic zones. Species from any of these habitats would have been immediately accessible to the Silver Glen Springs site's population. In this section, I overview characteristics in each habitat and examine the indigenous species present. I conclude by highlighting some of the migratory species that may be present at Silver Glen Springs. A full species list can be found in the Appendices (Appendix 1 and 2).

The Spring

The spring habitat encompasses both the spring vent and the immediately adjacent basin. The high volume of water discharged by the spring vent makes Silver Glen Springs as a 'first-magnitude spring', the largest class of springs. As the water discharged from Silver Glen Springs has passed through the Floridian Aquifer system, which provides thermal insulation, it maintains a constant, year-round temperature of approximately 22–23 degrees Celsius. In addition, the spring water has a high mineralogical content and is exceptionally clear, with a higher salinity than the nearby Lake George (Florida Natural Areas Inventory (FNAI) 2010; Scott et al. 2004).

Numerous indigenous species of fish live around the spring vent including largemouth bass (*Micropterus salmoides*), sunfish (*Lepomis sp.*), gar *(Lepistoseous sp.*), mullet (*Mugil sp.*) and at least 16 other genera (Appendix 1). The spring vent is also home to an endemic species of crayfish, the Silver Glen Springs cave crayfish (*Procambarus attiguus*). These crayfish only occur within the Silver Glen Springs vent and in the subterranean caves below the vent opening, and provide an important source of food for several species of fish, including striped bass (*Morone saxtilis*).

The Spring-Run Stream

The water emitted from the Silver Glen Springs vent extends 0.96 km eastward in a spring-run stream, discharging into Lake George (Harris et al. 2017). This spring-run stream is present year-round and is slow-moving, resulting in the accumulation of soft sand bottoms and debris along its length. This creates a prime habitat for many aquatic organisms (FNAI 2010). Both the clear quality and high mineral content of the spring water, a result of the spring-water filtration through the Floridian Aquifer, allow for the proliferation and diversity of both emergent and submerged aquatic vegetation, together known as macrophytes. Macrophytes provide light-accessible structures upon which other primary producers such as microalgae and diatoms can attach (Knight and Notestein 2008). Submerged macrophytes along the bottom of the stream are diverse and plentiful and include species such as southern naiad (*Naias guadalupensis*), widgeon grass (*Ruppia maritima*), and horned pondweed (*Zannichellia palustris*). Algae are also bountiful in the spring-run stream, with several species occurring. Emergent macrophytes along the stream edge include duckweed (*Lemna sp.*) and pennywort (*Hydrocotyle sp.*). Macrophytes also provide nutrition for herbivorous consumers such as manatee, waterfowl, insects, crustaceans, and invertebrates. Emergent vegetation also provides a habitat for several species of frog and apple snails (*Pomacea spp.*) (Darby et al. 2002). Not surprisingly, the breadth of prey species and vegetation in the spring run attracts diverse faunal species. These include alligator (*Alligator mississippiensis*) and several indigenous species of aquatic turtles and snakes.

Indigenous waterfowl are also found in the spring-run, including multiple species of herons, mallard ducks (*Anas platyrhynchos*) and American white ibis (*Eudocimus albus*). (Pandion Systems Inc. 2003)

Lake George

Lake George, the second largest lake in Florida, is the final habitat in my study area. The lake is 186 km^2 with a relatively shallow maximum depth of 4.5 m (EPA 1977). Most of the water flowing into Lake George originates from the St. Johns River, with a small portion coming from springs surrounding the lake, including Silver Glen Springs itself. The lake is eutrophic (has a high nutrient content), allowing it to support high biological productivity. Water temperatures along the St. Johns, including Lake George, generally remain below 20 degrees Celsius during the winter months and above 25 degrees Celsius in the summer months (Harris 2017). The saline content in Lake George is higher than other bodies of freshwater in Florida and allows the lake to support a variety of salt-water fish and crustacean species.

Terrestrial Habitat

The land surrounding the Silver Glen Springs area includes four primary soil types: Sellers-Palmico soil, Paola Sand, Pomello Sand, and Made land (USA Department of Agriculture 1975). Immediately adjacent to most of the spring vent, run, and outlet into Lake George is a Sellers-Palmico combination soil. This soil is poorly drained and organically rich, and it supports a variety of rushes. A patch of Paola Sand (0–8% slope) borders the Sellers-Palmico soils on the south side of the run. Paola Sand is sandy, heavily drained, and supports vegetation such as pine (*Pinus sp.*), oak (*Quercus sp.*), and saw-palmetto (*Serenoa repens*). On the outer edges of the Silver

Glen Springs area, surrounding the Sellers-Palmico soils and Paola Sand, Pomello Sand predominates. This is a moderately well-drained, sandy soil that, like Paola Sand, supports pine, oak, and saw-palmetto. Finally, a sizeable portion of the Silver Glen Springs area is human-made land, created during the process of shell mining by importing soils from outside locations to level out and extend the habitable area on the south-side of the run. (USA Department of Agriculture 1975)

The soils around Silver Glen Springs support an ecological zone composed primarily of oak and pine. However, several other riparian species also occur around the spring. These include red maple (*Acer rubrum*), hickory (*Carya glabra*), southern red cedar (*Juniperus stiliciola*), and bald cypress (*Taxodium distichum*). The land around Silver Glen Springs supports a diverse array of faunal species. Birds of prey, including bald eagles (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*), live in the riparian vegetation around the spring and feed on aquatic species. Other birds present include songbirds, which feed on insects, and terrestrial birds such as wild turkey (*Meleagris gallopavo*). Terrestrial mammals include white-tailed deer (Odocoileus virginianus), raccoon (*Procyon lotor*) and several species of squirrel (*Sciurus sp*.).

Migratory Species

Multiple species of birds migrate to Florida during the winter months. These include several species of ducks, such as the green-winged teal (*Anas carolinensis*), blue-winged teal (*Anas discors*), and ring-necked duck (*Aythya collaris*). Both teal species are members of the dabbling duck family, which also includes the indigenous mallard (*Anas platyrhynchos*). Members of this family feed on submerged aquatic vegetation by tipping their bodies forward to graze underwater. While these species are not present year-round at spring-run habitats, Silver Glen Springs, with its plethora of aquatic vegetation, is ideal for these species. The ring-necked duck is a member of the diving duck family, which dive to feed on invertebrates and submerged aquatic vegetation. Unlike other species of diving ducks, which occupy large, open bodies of water, ring-necked ducks also prefer shallow aquatic areas like the Silver Glen spring-run stream. Several species of songbird, including tree swallow (*Tachycineta bicolor*) also migrate to Silver Glen Springs during the winter months to subsist on insects around the spring-run.

The spring vent itself attracts two migratory aquatic species. Because it has a constant temperature year-round, the Silver Glen Springs vent serves as a refuge for manatees (*Trichechus manatus*), which visit the spring during the winter to avoid the cooler water temperatures along the coast and in the St. Johns River. The spring, on the other hand, is a spawning area for striped bass (*Morone saxatilis),* which require its constant cooler temperatures during the summer months (Harris et al. 2017). While resident populations do occur, striped bass are also anadromous and migrate from the ocean into freshwater to spawn.

Modern Ecological Changes

The ecological diversity in both Silver Glen Springs and the larger St. Johns River has been heavily impacted by the introduction of several non-native species. This section discusses which species have been introduced in the past century or two before highlighting how these species have altered the ecology of the St. Johns River.

The St. Johns River Water Management District lists hydrilla (*Hydrilla verticillata*), water hyacinth (*Eichhornia crassipes*) and water lettuce (*Pista stratiotes*) as the top three most invasive plant species along the St. Johns River (St. Johns River Water Management District 2017). Hydrilla, water hyacinth, and water lettuce can greatly diminish waterflow and dramatically alter chemical composition and oxygen levels within an environment. In addition, thick mats of all three species can reduce native species of plants such as pondweeds (*Potamogeton spp.*), tapegrass (*Vallisneria americana*), and coontail (*Ceratophyllum demersum*) that are used by animal populations for food or nesting (Ramey and Peichel 2001a, 2001b, 2001c). Dense hydrilla mats have been documented to particularly adversely affect fish species such as large-mouth bass by restricting prey availability (Evans 2008). The oxygen-altering effects of these non-native aquatic plant species can dramatically affect faunal communities in the St. Johns River. Oxygen-dependent species such as fish are particularly vulnerable to such changes, and their absence can further affect species from other trophic levels (Evans 2008). Other effects on native plant species can also occur. For example, the use of aquatic herbicides to reduce the abundance of non-native species can affect native species in two ways. They can be toxic to native plant species through either direct toxicity, or through the ecological consequences of the rapid, mass death and decomposition of the target species (Evans 2008). Not all consequences of non-native species are negative, however. In some cases, researchers have determined that heavy mats of hydrilla, water hyacinth, and water lettuce can increase the abundance of some invertebrate species such as apple snail (*Pomacea paludosa*) and crayfish (*Procambarus sp.*).

While less researched, multiple species of animals have also been introduced into the St. Johns River area. Several fish species have also been introduced over the past century, primarily through either aquarium release or aquaculture escape (Florida Fish and Wildlife Conservation 2017). These include multiple species of catfish and tilapia, among others. Of these, blue tilapia (*Oreochromis aurea*) and vermiculated sailfin catfish (*Pterygoplicthys disjunctivus*) have been noted at Silver Glen Springs (Wetland Solutions 2010). The effects of the introduction of invasive fish species remains underreported.

Invasive mammal species are also prevalent throughout Florida. Of these, the wild hog (*Sus scrofa*), introduced in the 1500's, directly competes with native species such as deer, turkey, and squirrels for habitat and food. Today, wild hogs reduce plant cover and create soil conditions that can be beneficial to exotic or invasive species (Barrios-Garcia and Ballari 2012).

Current Research on St. Johns River Paleoenvironment

Paleoclimate

The climate of modern Florida is a relatively recent coalescence of conditions. Following the Last Glacial Maximum at around 20,000–22,000 years ago, the Earth underwent a warming trend periodically interrupted by cooler periods (Donoughue 2015; Peltier and Fairbanks 2006). The Younger-Dryas (12,900–11,700 cal BP) was one such global cooling period, though its effects in Florida were slightly different than the rest of North America. Due to atmospheric effects caused by the Gulf of Mexico, the Younger Dryas both increased summer precipitation and raised winter temperatures in Florida (Donoughue 2015). Conditions in Florida may have become drier as the Younger Dryas progressed (Donoughue 2015).

After the conclusion of the Younger Dryas, the Earth began a warming phase. This period is known globally as the Holocene (11,700 cal BP–present). Several periods of increased warming have occurred during this period. One such climatic event called the Hypsithermal (also called the Middle-Holocene Climatic Optimum or Altithermal) occurred between 8000–5800 cal BP (Randall 2015; Anderson and Sassaman 2012). In addition, a smaller, more intense climatic event known as the 8.2kyr Event lasted from 8200-8000 cal BP. Climate warming accelerated during the Hypsithermal, directly affecting global sea level rise and causing significant changes in environment and paleoecology. This thesis examines archaeological samples dating between 8000–7000 years ago, and the samples may reflect Floridian responses to this climatic event.

Sea Levels and Springs

By around 5000 cal BP sea levels had stabilized and were around only 4.5 meters lower than they are today (Alvarez Zarikian et al. 2005). Due to the low gradient of Florida, particularly around the Gulf of Mexico, sea level rises dramatically affected its geography. By around 5000 cal BP**,** the Florida coastline had moved approximately 100 km further inland in certain areas than it had been around 10,000 years ago (Miller 1992). Miller (1992) has suggested that sea level rise increased local water-table levels and saturated Florida's aquifers, leading to an increase in hydrostatic pressure within the aquifers. In this hypothesis, the increased pressure forced water out through cracks in the ground surface and created or increased the intensity of existing springs. While Miller (1998) has argued that spring flow would have begun between 6000–5000 cal BP, new evidence has emerged challenging this assertion. O'Donoughue (2015) highlights how the quantity of flowing springs gradually increased over an extended period. According to his model, most Florida's springs only began to flow when the aquifer water levels were 2 meters below their present-day levels. At the earliest, springs would only have begun to flow when water levels in the aquifer were around 10 meters less than modern day (O'Donoughue 2015). Unfortunately, as water levels within the Florida Aquifer do not directly correlate with sea levels it is difficult to tell precisely what aquifer levels may have been in the past (O'Donoughue 2015). This said, it does appear that spring output stabilized alongside sea levels at around 5000 cal BP (Alvarez Zarikian et al. 2005; Clausen et al 1979).

Paleoecology

The changes in climate and the increased intensity of springs would have directly impacted the types and densities of vegetation that occurred in Florida. Prior to the mid-Holocene climatic changes, the dry environment in Florida would have promoted forests consisting of predominantly oak (*Quercus sp.*) and shrubs (Grimm et al. 2006). Some researchers have suggested that these oak-shrub forests indicate that the environment in Northern Florida was a prairie or savanna (Donoughue 2015). However, other studies have suggested that the environment was instead closed woodlands (Donoughue 2015). Oak forests in northern Florida appear to have begun to decline around 6000–5000 years BP. Modern analogs of these oak-shrub forests are difficult to find due to both urban development and the abundance of pine forests within modern-day Florida (Grimm et al. 2006).

As Florida transitioned from a dry to wetter, moister environment, pine forests began to replace oak forests and swamp plant species and wetlands began to develop (Donoughue 2015; Grimm et al. 2006). In northern Florida, this transition occurred around 8500–7500 cal BP and was more related to sea-level rise than to moister climatic conditions (Donoughue 2015). In Northern Florida, the dominant pine species was longleaf pine (*Pinus palustris*).

Conclusions

My review of the available research into both the modern-day and paleoenvironmental conditions in the St. Johns River region indicates that by 8600 cal BP, springs were likely flowing, sea levels were significantly closer to their modern-day levels, and the general paleoenvironment likely had several similarities with modern-day conditions. The species diversity along the St. Johns River and at Silver Glen springs today is very diverse, able to support a wide variety of fishes, invertebrates, and other vertebrates. My research in this section suggests to me that by at least 8600 cal BP the St. Johns River had an environment that more closely resembled modern-day. As a result, the paleoenvironment during this period may have been able to support a diverse riverine economy.

CHAPTER 5

SILVER GLEN SPRINGS SITE AND SAMPLED CONTEXTS

Silver Glen Springs is a large site located on a first-magnitude spring on the west side of Lake George, one of the major lakes of the St. Johns River (Figure 1-1). The site's archaeological record spans from the Middle Paleoindian through part of the Woodland period. Although all that remains of the site today are subsurface and subaqueous deposits, the site once contained numerous monumental shell constructions. The largest was 'U'-shaped and approximately 300 meters long (Sassaman et al. 2011) (Figure 5-1). In the late nineteenth century, Jeffries Wyman (1875) of the Peabody Museum of Ethnology and Archaeology visited Silver Glen Springs to document it, and he was the first to recognize shell-mound sites in Florida as anthropogenic in origin. However, in 1923, only 50 years after Wyman's discovery, Silver Glen Springs was sold to a mining company that destroyed nearly all the shell deposits at the site for use as construction materials (Randall 2014).

Excavations for the last decade have focused on the remnants of the shell mounds at Silver Glen Springs to reconstruct the various phases of their construction. Prior to shell mining, there were at least two U-shaped mounds, two linear shell ridges, and additional shell and non-shell-bearing deposits arranged along the Silver Glen Springs Run (Randall 2014, Randall et al. 2014). The earliest dates at the Silver Glen Springs come from a series of early-phase pit deposits discovered beneath Locus A in 8LA1-West, which have yielded multiple undisturbed dates ranging from 8900–6900 cal BP (Figure 5-2) (Randall and Sassaman 2017). Today, Locus A is characterized by a central linear depression flanked by escarpments (Figure 5-4). The current topography is due to the mining that stripped much of the site away in the 1920s. Randall's (2014, 2015) reconstruction indicates the mound was once ca. 200-m long, 100-m wide, and three or more meters high. Excavations of Locus A have focused on the remaining basal strata and lateral escarpments. Overall, at least 3 m of intact stratigraphy remains in some places.

Randall (2017) has determined that two distinct phases of pits are present under Locus A. Evidence of the earliest occupation at Silver Glen Springs begins in a series of pit deposits dating between 8900–7000 cal BP. The pit deposits at Locus A are contained within an oval-shaped deposit ca. 130 meters in length, and at roughly the center of the subsequently constructed Mt. Taylor period shell mound (Figure 5-3). The deposit consists of a one-meter thick organically-enriched layer of soil, which Randall and Sassaman (2017)

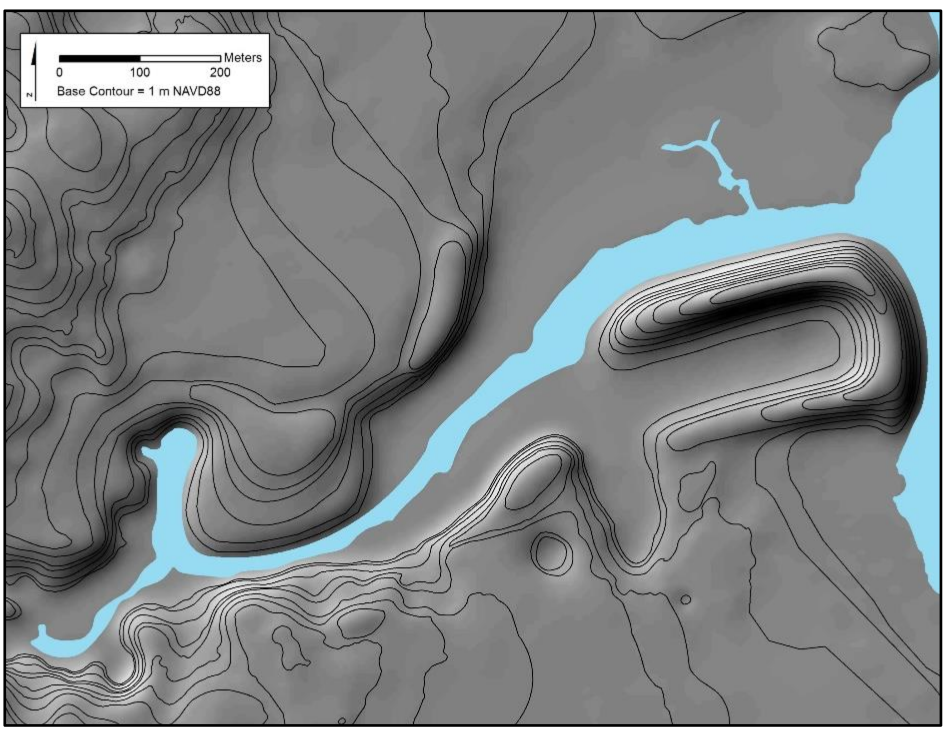

Figure 5-1. Reconstruction of Silver Glen Springs (Randall 2014)

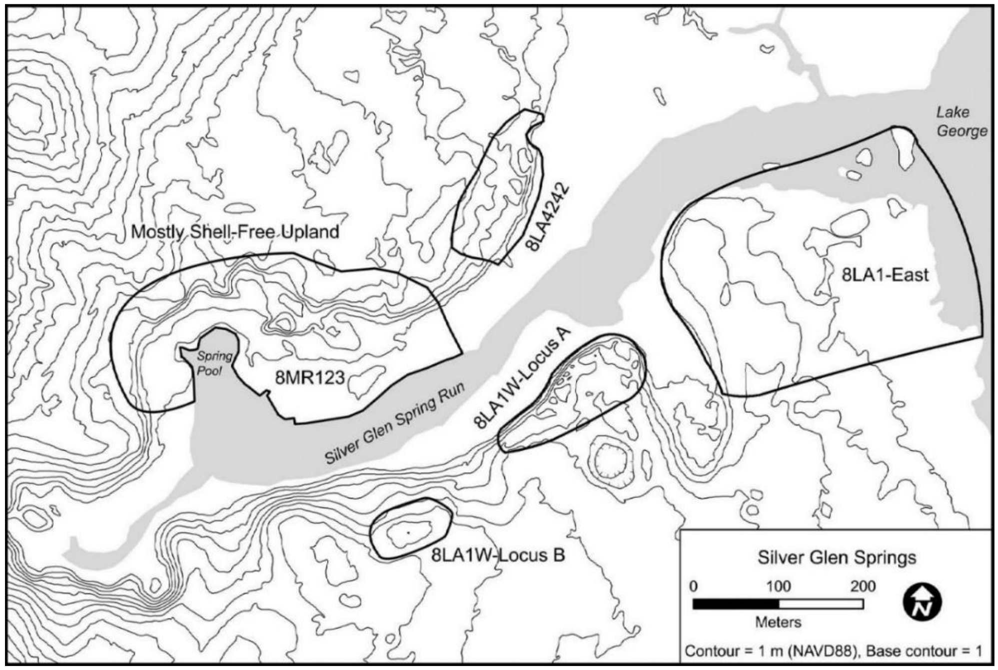

Figure 5-2. Location of Sites found at Silver Glen Springs (Randall et al. 2014)

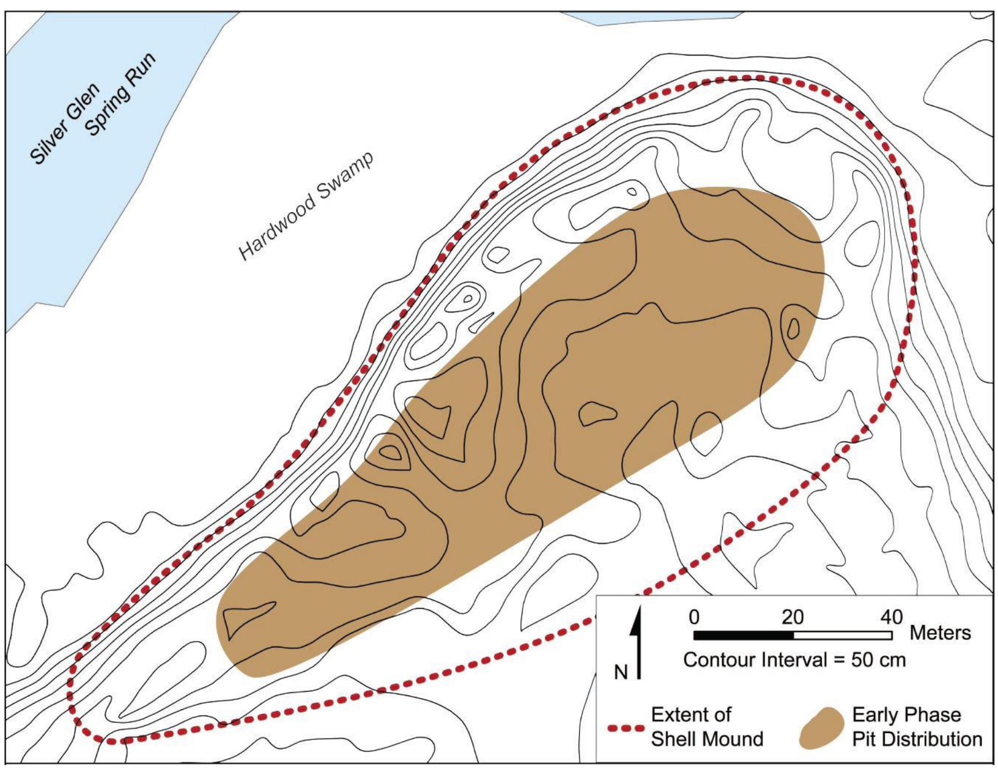

Figure 5-3. Extent of Shell Mound and Early Phase Pit Distribution at Locus A (Randall and Sassaman 2017)

have determined to be the palimpsest of many pits that may number in the hundreds. Randall and Sassaman (2017) have isolated five pits with stratigraphic integrity containing vertebrate fauna, freshwater shell, and botanical remains. A later phase of pits, dating between 6400–6200 cal BP coincides with the beginning of intensive shell mound construction at Silver Glen Springs and immediately precedes the construction of the Locus A shell mound at around 6300–5700 cal BP (Sassaman et al. 2011).

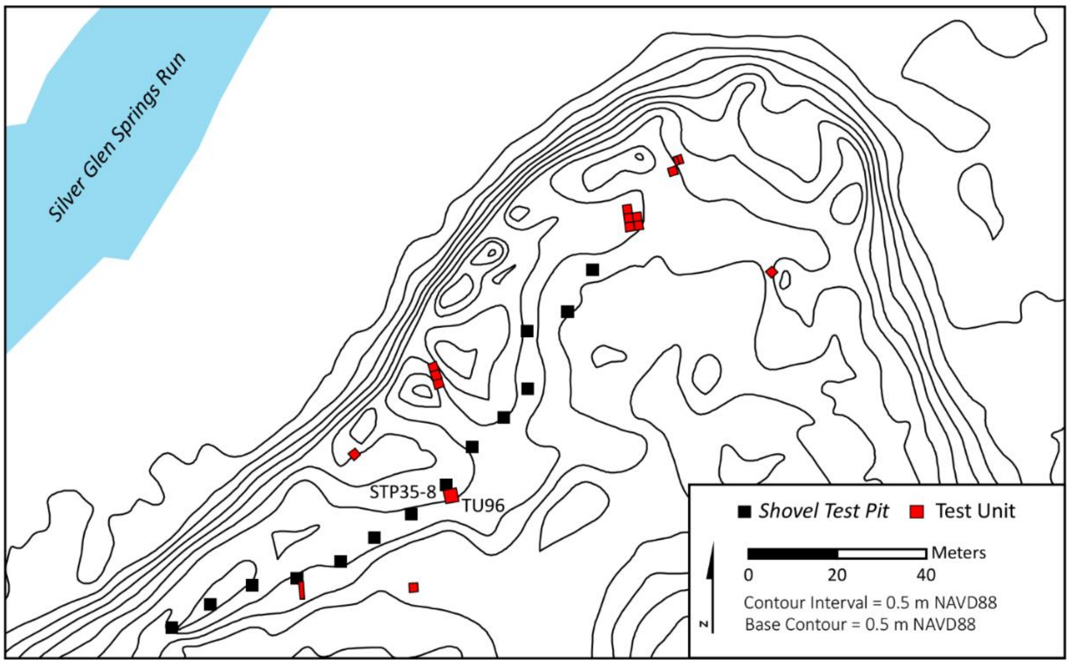

Figure 5-4. Location of Test Unit 96 at Locus A with Modern Topography (Randall 2017)

Contexts Analyzed for this Thesis

This thesis examines three archaeological pit features excavated from a single test unit (TU96) in the summer of 2015 by University of Oklahoma and University of Florida personnel, directed by Dr. Asa Randall. As summarized by Randall (2017), pits from both phases contain a mixture of vertebrate fauna, freshwater shell, and botanical remains. Near-fossilized tree roots cross-cutting some of the early-phase deposits are absent in the later pits, suggesting that a hiatus occurred between the two pit-digging phases. There is at least one major difference between the two phases of pits. Unlike the early-phase pit deposits, the later pits show evidence of thermal alteration at their bases, indicating an increase in in-situ burning.

This thesis examines the faunal remains present in two early-phase pit deposits and one pit deposit dating to the Mt. Taylor period that were successfully isolated and

Table 5-1. Corrected and Calibrated BP Date Ranges for Analyzed Pit Deposits

Feature	**Corrected Radiocarbon Date**	**Calibrated Radiocarbon Date (2 sigma)**
Feature 200	6170 +/- 30	7170–6970
Feature 201	7100 +/- 30	8020–7870
Feature 205	7640 +/- 30	8540–8380

excavated during the 2015 excavations (Table 5-1). These early-phase pits provide the earliest known evidence for occupation at Silver Glen Springs and the integrity of these pits, in addition to their apparent deposition as single events, makes the selected three pit features ideal foci of analysis for this thesis.

The three pit features were deposited over a period of approximately 1500 years and span the early Middle Archaic and early Mt. Taylor periods. I have included in my analysis the faunal remains from Slot Trench 2, which bisected the early phase pit deposits. I provide here a description of Slot Trench 2 and the three pit deposits. These descriptions are based on Randall’s (2017) excavation report.

Slot Trench 2

During the excavation of TU96, two slot trenches were excavated beginning at a depth of 40 centimeters below surface (cmbs) to clarify the location of suspected early phase pit features (Figure 5-5). Slot Trench 2 was oriented north/south and was excavated down to 90 cmbs. Excavators encountered two pit deposits during the excavation of Slot Trench 2, Feature 201 and Feature 205. The pit deposits can be seen in the wall profiles of Slot Trench 2 (Figure 5-6). The portion of Feature 205 that was within Slot Trench 2 was removed and bagged separately. The remainder of the trench was dry screened with 1/4" mesh and bagged as a single unit.

The Slot Trench 2 samples that I analyzed pre-dates the Mt. Taylor period. Based on excavation data from both the 2015 and 2012 field seasons, it is highly likely that the pit features identified in Slot Trench 2 are not the only pits present within the trench. Randall believes that much of Slot Trench 2 is comprised of many overlapping or closely spaced pit deposits. Similarities between the appearance of each of these pits prevented excavators from isolating these. Feature 205 and 201, then, had clear enough margins with discriminating characteristics to allow excavators to isolate and identify each as a separate feature. As it is highly likely that the faunal remains in Slot Trench 2 represent the combined contents of multiple pits which could potentially span several hundred years of occupation, I included Slot Trench 2 as part of my analysis. Including Slot Trench 2 also allows me to provide context for the other analyzed pit features. Although the size range of the fauna recovered from Slot Trench 2 included only 1/4" screened samples, the sample is larger volumetrically, and thus might include rarer or larger elements.

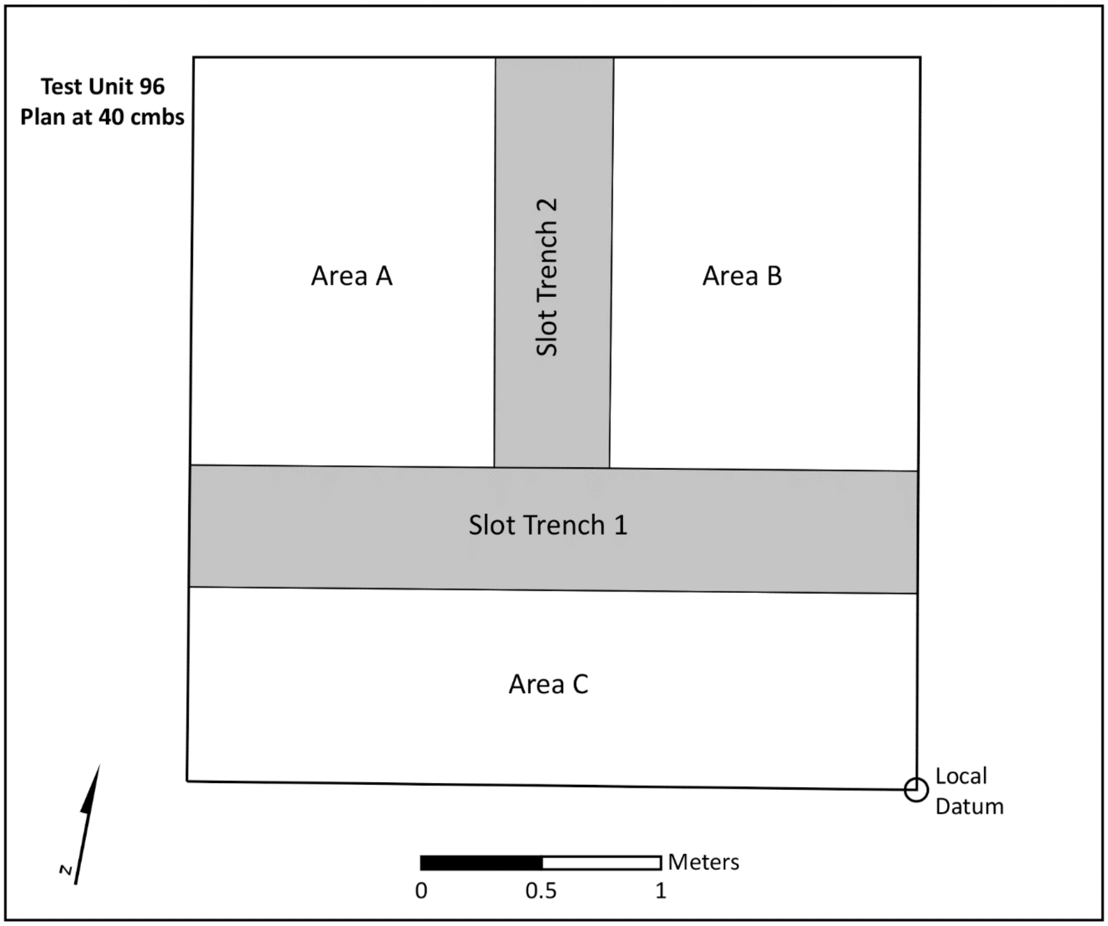

Figure 5-5. Plan map of TU96 at 40 cmbs, showing slot trenches and excavation areas (from Randall 2017)

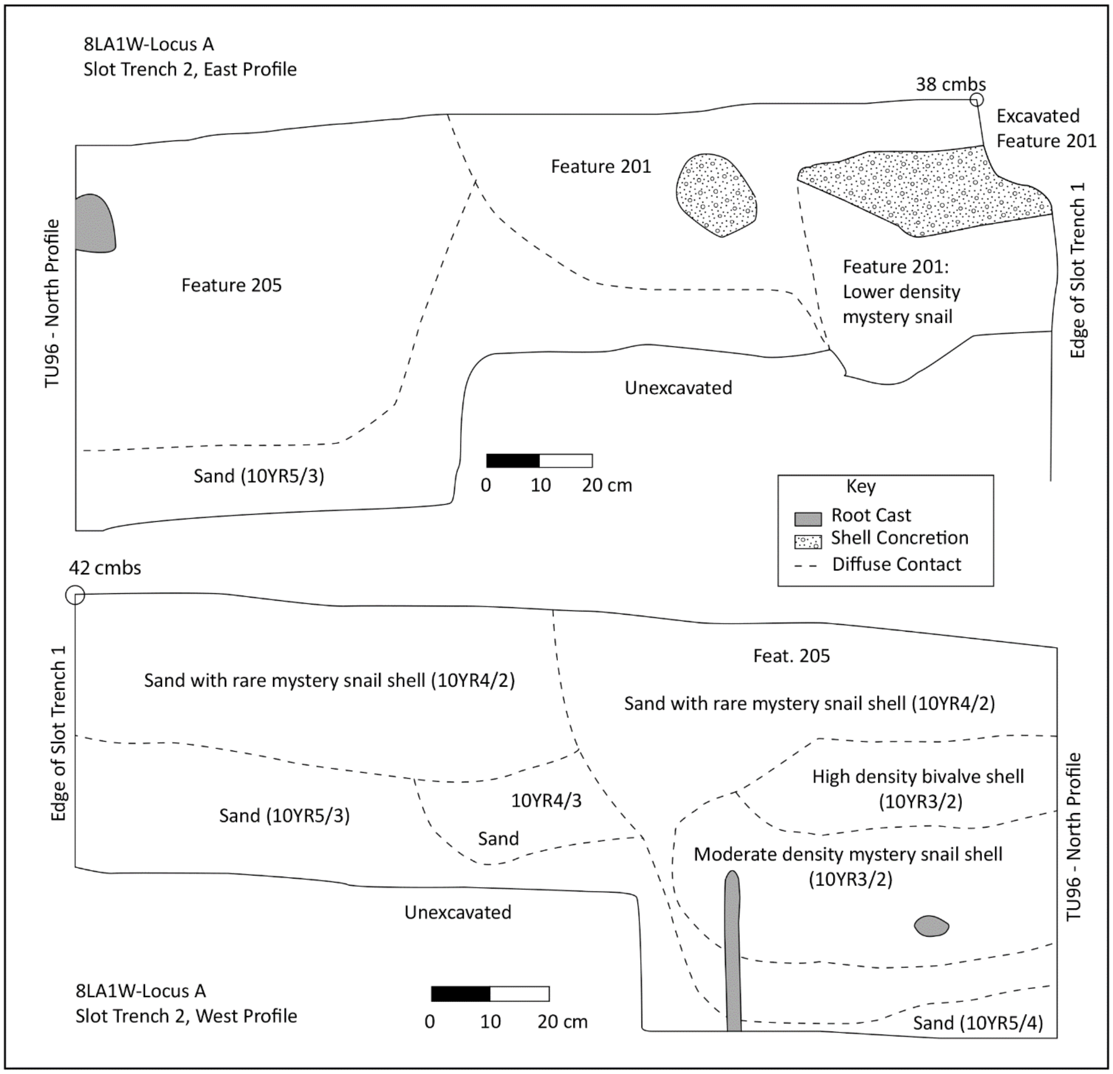

Figure 5-6. East and West profiles of Slot Trench 2 (from Randall 2017)

Feature 205

Feature 205 is the earliest of the three pit features analyzed in this thesis. It was first recognized at 40 cmbs during the excavation of Slot Trench 2. The portion of Feature 205 located within the slot trench was isolated, excavated as a bulk sample, and water-screened through 1/8” mesh. The remaining in-situ portion of the feature was profiled prior to excavation and excavated in two parts. The western part of Feature 205 was clearly defined while the margins of the eastern part were less so. Feature 205 measured approximately 100 cm wide and 76 cm deep and was filled with highly organic, very dark greyish brown sand with low to high density shell layers. A radiocarbon age of 8540–8380 cal BP was obtained from a sample of burnt hickory nutshell, placing it within the early Middle Archaic period. Feature 205 lacks any evidence of burning at its base. Figures 5-6 and 5-7 both show Feature 205 in profile. The bulk sample contained approximately 29 grams of bone and 441 grams of shell, crushed and whole, including banded mystery snail (*Viviparus georgianus*), Florida apple snail (*Pomacea paludosa*), mesa rams horn (*Planorbella scalaris*), rams horn, terrestrial snail, bivalve (Unionidae), and rasp elimia (*Elimia floridensis)*. (Randall, personal communication)

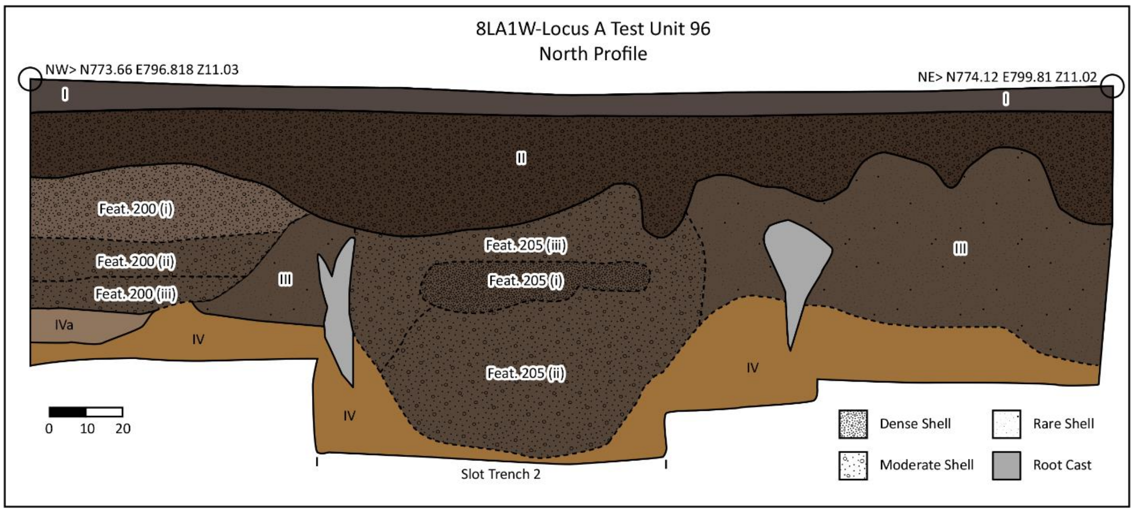

Figure 5-7. North Profile of Test Unit 96 showing Features 200 and 205 (from Randall 2017)

Feature 201

Feature 201 was first identified at 35 cmbs and was initially separated into two halves. The north half was excavated to 66 cmbs before excavators decided to remove Slot Trench 1 to expose Feature 201 in profile. The northwestern portion of Feature 201 was excavated before Slot Trench 2 was removed to provide further clarity regarding the margins of the deposit. Based on the profiles of Feature 201 in both trenches, the northeastern portion of the feature was excavated. From this portion a bulk flotation sample was removed and the remainder of the portion water-screened through 1/8” mesh. I analyzed the northeastern water-screened portion of Feature 201 for this thesis. Feature 201 can be seen in both Figure 5-6 and Figure 5-8. (Randall 2017)

Feature 201 was approximately 48 cm deep and 125 cm wide and was filled with a highly organic, very dark greyish brown sand with low to moderately dense mystery snail and mineralized roots. While the core of Feature 201 is semi-concreted with abundant charcoal, it is unclear if the pit contains any evidence for burning at its base. A calibrated age of 8020–7870 cal BP was obtained from a sample of burnt nutshell, placing it within the early Middle Archaic period. The bulk flotation sample from Feature 201 contained approximately 28.2 grams of bone and 159.4 grams of shell, crushed and whole, including mystery snail, apple snail, mesa rams horn, rams horn, bivalve, and elimia. (Randall, personal communication; Randall 2017)

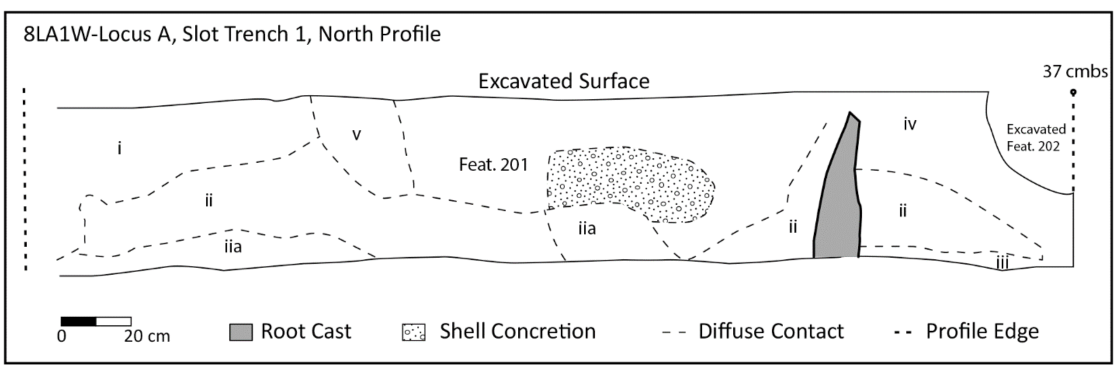

Figure 5-8. Slot Trench 1 North Profile with Feature 201 highlighted (from Randall 2017)

Feature 200

Feature 200 was first identified at 35 cmbs and was initially sectioned into east and west halves. The east half was removed and water-screened through 1/8” mesh, the feature was profiled, and the west half was removed as both a bulk flotation sample and for 1/8” mesh water-screening. Both water-screened halves were analyzed for this thesis. (Randall 2017)

The feature measures approximately 80 cm from east to west, 130 cm from north to south, and is at least 42 cm deep (Figure 5-7). Feature 200 is filled with an organic, very dark greyish brown matrix with moderately dense shell. The base of Feature 200 was semi-concreted and contained abundant charcoal, and the sand immediately below the feature was rubified (reddish), which likely indicates that there was a fire at the base of the feature. A radiocarbon age of 7170–6970 cal BP was obtained from a sample of burnt hickory nutshell, placing it near the accepted start of the Mt. Taylor period.

CHAPTER 6

METHODS

This chapter discusses the methodology I used in analyzing the early pit deposit samples. I have subdivided the chapter into two sections. The first section details the recovery methods used by the St. Johns Archaeological Field School in the field and my methods for isolating faunal material from the sample in the lab. The second section explains my analysis methods.

Recovery Methods

The analyzed specimens came from Test Unit 96, excavated in the summer of 2015. This unit, measuring 3x3 meters, was excavated by field staff and students in arbitrary 10 cm levels. General levels were dry-sieved through 1/4" mesh. Students water-screened bulk feature samples through 1/8" mesh and bagged the resulting materials on-site. Staff from the University of Oklahoma brought these samples to the Laboratory of Landscape Archaeology at the University of Oklahoma. In the lab, volunteers dried and re-bagged the bulk samples. I then size-graded the material through 1/4" and 1/8" nested mesh sieves and sorted the samples by hand to isolate any faunal material, which was then bagged separately for analysis. If the bulk samples for a feature spanned multiple bags with the same bag number, I combined the faunal samples from each. As the samples has been originally water-screened through 1/8" mesh, I disregarded any faunal remains smaller than 1/8".

Table 6-1. Features, Sections, and Size Grades selected for analysis.

Test Unit	Feature	Section	Size Grades Analyzed	Screening Type (Wet/Dry)
96	205 (Slot Trench 2)	West ½	>1/8”	Dry
96	205	West ½	>1/4”, >1/8”	Dry
96	205	East ½	>1/4”, >1/8”	Wet
96	201	Northeast ¼	>1/4”, >1/8”	Wet
96	Slot Trench 2	N/A	>1/4”	Dry
96	200	East ½	>1/4”	Wet
96	200	West ½	>1/4”, >1/8”	Wet

I elected to use screen mesh sizes of 1/4” and 1/8” based on the available literature, particularly literature concerning appropriate sampling methods for fish bones. Partlow (2006) notes that selecting an appropriate screen size depends, at a minimum, on the size of the fish in the sample and the degree of fragmentation. While there are cases in which 1/16” mesh is appropriate for the sample, particularly if there are many smaller fish, I chose not to assess the sampling benefits of 1/16” mesh, instead only using 1/4" and 1/8” mesh. By choosing to use these mesh sizes, I cut down the time required for analysis into something feasible for a Master’s thesis. While there isn’t any doubt that using 1/16” mesh would have provided a more complete picture of the types of smaller species present in the sample, based on the available literature (e.g. Colley 1990; Nagaoka 2005) I feel that using 1/4" and 1/8” provides an adequate sample with representation from all size fishes.

Analysis Methods

Preliminary zooarchaeological analysis was conducted under the supervision of Dr. Leland Bement using the Oklahoma Archaeological Survey’s comparative faunal collections. I made additional identifications during a two-week period at the Florida Museum of Natural History's zooarchaeological comparative collection in Gainesville, Florida under the supervision of Dr. Katherine Emery. Identifications made in Florida were done so with the assistance of Meggan Blessing. I used reference books such as Olsen (1968) and Gilbert et al. (1996) to supplement the comparative collections to identify specimens.

I tabulated the number of specimens for each taxon in an Excel database as a Number of Identified Specimens value (NISP). Identified specimens are any specimen that can be identified to class, order, family, genus, or species. I identified faunal remains to the lowest taxon wherever possible and cataloged unidentifiable specimens as Vertebrata (UID Vertebrate). Using NISP, each specimen (bone, tooth, scale, etc.) was counted as a single unit regardless of fragmentation or level of taxonomic identification (Peres 2010). I also identified the basic anatomical category for each identifiable specimen (cranial, axial, and appendicular, or in the case of fish, cranial and post-cranial) and, when possible, the element, portion of the element represented by the specimen, and side (left/right). In addition, I noted age (juvenile/adult), sex (male/female), and documented on a presence/absence basis any evidence for burning, cut marks, and weathering. As specimens were identified I tagged, individually bagged, and cataloged them.

NISP is the backbone of any zooarchaeological analysis and is the basic method of quantification. Some issues exist with NISP. Importantly, a differential degree of fragmentation between animal classes can result in a higher NISP count and an overestimation of certain classes. (Peres 2010)

I also utilized Minimum Number of Individuals (MNI) in my analysis. MNI is an estimation of the smallest quantity of individual animals required to account for all the identified specimens in a sample (Peres 2010). I used the methodology laid out by White (1953), Grayson (1984), and Peres (2010) and determined MNI through the most abundant diagnostic element for each taxon. Following Peres' (2010) lead, I considered size differences and epiphyseal union whenever possible. MNI has multiple issues; First, it assumes that each analyzed strata or feature is temporally separate from those around it. In multi-component sites, where the remains from one individual can be scattered between multiple strata or features, this can overinflate MNI counts. MNI can also overinflate the counts of poorly represented taxa comparative to well-represented taxa, particularly in highly-fragmented samples (Crothers 2005).

I gathered weights for each taxon using a Jennings CJ600 digital scale, which has 0.1-gram precision. Each Specimen ID was weighed individually and summed together to calculate the total taxa weight for each feature. To provide an estimated total weight for each taxon when the weight of a Specimen ID was less than 0.1 gram, I assigned a weight of 0.05 grams. Weights that were less than 0.1 grams were tabulated as <0.1 in Appendix 6.

I determined the age of each specimen based on the presence/absence of unfused epiphyses. Due to the high degree of fragmentation in the sample, I was only able to determine sex in the case of several small mammal specimens.

Burning was the most common modification found within the sample. While there exists a standard method to identify the degree of burning using specimen color that is useful in understanding the direction of heat exposure (see Shipman et al. 1984), the high degree of fragmentation in the analyzed sample reduced the analytical value of this method (Crothers 2005). As such, I decided to record only the presence and absence of burning.

Faunal remains are subject to differential preservation based on a multitude of factors, including mode of death, osteological characteristics, and depositional environment (Peres 2010). Zooarchaeological remains from shell mound sites tend to have a high degree of preservation, and tiny vertebrate remains are often well-preserved (Linse 1992; Peres 2001). In addition, site formation can be swift with 'little post-depositional disturbance, exposure, and weathering' (Peres 2010). The features analyzed in this thesis all appear to have been created in single depositional events. As such, the case of the samples analyzed for this thesis, weathering may indicate pre-depositional processes. Weathering was determined on a presence/absence basis through the identification of rodent/carnivore gnawing or any extreme/unusual weathering based on the osteological characteristics of each specimen.

CHAPTER 7

FAUNAL ANALYSIS RESULTS

In this chapter, I present the results of my faunal analysis for each pit deposit and Slot Trench 2. For each, I provide a faunal inventory which details the species MNI and NISP. I then discuss any weathering present on the remains within each deposit and highlight any evidence of cultural modification such as burning or cut marks.

Feature 205 (8540–8380 cal BP)

Faunal Inventory

The total number of faunal specimens (NISP) recovered from Feature 205 is the largest of all the features chosen for analysis, totaling 4719 specimens. The total number of specimens identified to order, family, genus, or species was 2646. Specimens from all five classes are represented in Feature 205 (Table 7-1).

Of the fish, seven taxa were identifiable to species, four to genus, and two to family (Table 7-2). The combined NISP of fish taxa, when excluding UID Vertebrate specimens, is 74.9%, making bony fish the most numerous of all the represented taxa (Table 7-1). Fish were represented primarily by small fishes, particularly those from the sunfish family such as shellcracker, large-mouth bass, and other species of bream. While gar was the most dominant species by NISP, it only had an MNI of four and the ease of identifying gar scales likely inflated NISP counts for this genus. Other species of fish, such as catfish, American eel, and mullet, were rare.

The next most represented taxon is reptile (17.8%), which is represented by two species, two genera, and two families. The reptile sample was dominated by members of the family Kinosternidae and included both mud and musk turtles. The remainder of

Table 7-1. Class NISP and MNI total for Feature 205 (Burnt and Unburnt)

Class	NISP	% NISP	MNI	% MNI
Actinopterygii	1983	74.9%	41	63.1%
Amphibia	37	1.4%	3	4.6%
Aves	58	2.2%	5	7.7%
Mammalia	96	3.6%	4	6.2%
Reptilia	472	17.8%	12	18.5%
Grand Total	**2646**	**100.0%**	**65**	**100.0%**

the reptile sample was comprised of snakes, including members of the non-venomous family Colubridae, all represented solely by vertebrae. A small portion of the sample comprised of very small numbers of carapace/plastron fragments from both snapping and soft-shelled turtle.

Mammals represented 3.6% of the total identified NISP of the sample and consisted of one identified species, two genera, and one family. The mammal sample was equally composed of white-tailed deer and rabbit. White-tailed deer was represented by a fragment of the humerus, half of a pelvis, a lumbar vertebra, a lower incisor, and the sesmoid. Rabbits from the genus *Sylvilagus*, which can include both cottontail and marsh rabbit, were identified via skull fragments, a pelvis, and a humerus. The small remainder of the sample was composed of marsh rat and the family Arvicolinae, which can include voles, lemmings, and muskrat. Both taxa were represented by portions of the skull.

Birds were the next most represented taxa at 2.2% of the total identified NISP of the sample. Three species, one genus, and three families were identified. Bird specimens are primarily represented by ducks; at least one individual was identified to the sub-family of Anatinae (surface-feeding/dabbling ducks) and one individual was further identified to the mallard, teal, and pinwheel genus (Anas). Duck specimens which could not be identified to sub-family were categorized as Anatidae. While Anatidae can include geese and swans, none of the specimens assigned to this taxon were large enough to be considered as either.

Of note is what appears to be a complete individual identified to the genus *Anas*, which includes mallards, teals, and pinwheels. This individual was identified by a paired set of coracoids, femurs, humeri, and ulnas, and may also be represented by an unpaired furcula and scapula. Other identified species included wild turkey, which was represented by both the pelvis and ulna. Members of the family Rallidae, which includes crakes, coots, and gallinules, primarily identified via the coracoid and scapula. Of the family Rallidae, both the American coot and common gallinule were identified.

Amphibians make up the remainder of the sample at 1.4%, and were roughly equally composed of frogs and sirens.

The MNI within Feature 205 is 65 individuals (Table 7-1). Of these, fish are the most numerous, comprising 63.1% of the sample, and are composed primarily of shellcracker and largemouth bass. Reptiles are the next numerous species, making up 18.5% of the total number of individuals.

Of all the individuals that were identified, a single small mammal (identified only to Rodentia) showed evidence of unfused long bone epiphyses, suggesting it was juvenile. Other than this case, no further evidence for immature species was encountered.

Table 7-2. Absolute and Relative Frequencies of all Vertebrate Fauna for Feature 205 of the Pre-Mt. Taylor Component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Actinopterygii	Actinopterygii	Ray-Finned Fish	1304	27.6%	0*	0.0%	63.05
	Amia Calva	Bowfin	50	1.1%	1	1.5%	4.15
	Lepisosteus sp.	Gar	210	4.5%	4	6.2%	28
	Ictaluridae	Catfish	9	0.2%	4	6.2%	1.85
	Mugil sp.	Mullet	2	0.0%	1	1.5%	0.1
	Anguilla rostrata	American Eel	2	0.0%	1	1.5%	0.1
	Centrarchidae	Sunfish	202	4.3%	0	0.0%	18.1
	Micropterus salmoides	Large-Mouth Bass	39	0.8%	7	10.8%	20.1
	Lepomis sp.	Bream	16	0.3%	3	4.6%	8.5
	Lepomis macrochirus	Bluegill	1	0.0%	1	1.5%	0.05
	Lepomis microlophus	Shellcracker	99	2.1%	15	23.1%	32.7
	Cypriniformes	Minnow	31	0.7%	1	1.5%	1.55
	Notemigonus crysoleucas	Golden Shiner	1	0.0%	1	1.5%	0.05
	Erimyzon sucetta	Lake Chubsucker	2	0.0%	1	1.5%	0.1
	Esox sp.	Pickerel	15	0.3%	1	1.5%	1.05
Actinopterygii Total			**1983**	**42.0%**	**41**	**63.1%**	**179.45**
Amphibia	Anura	Frog	19	0.4%	2	3.1%	0.85
	Caudata	Salamander	4	0.1%	0	0.0%	0.8
	Siren sp.	Siren	14	0.3%	1	1.5%	1.65
Amphibia Total			**37**	**0.8%**	**3**	**4.6%**	**3.3**
Aves	Aves	Bird	32	0.7%	0	0.0%	4.65
	Anatidae	Ducks, Geese, Swans	4	0.1%	0	0.0%	8.7
	Anatinae	Surface-feeding duck	2	0.0%	1	1.5%	0.35
	Meleagris gallopavo	Turkey	2	0.0%	1	1.5%	8
	Anas sp.	Mallard, Teals, Pinwheels	11	0.2%	1	1.5%	16.9
	Rallidae	Crakes, Coots, and Gallinules	2	0.0%	0	0.0%	0.65
	Fulica americana	American Coot	3	0.1%	1	1.5%	0.15
	Gallinula galeata	Common Gallinule	2	0.0%	1	1.5%	0.1
Aves Total			**58**	**1.2%**	**5**	**7.7%**	**39.5**

Table 7-2. continued.

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Mammalia	Mammalia (Large)	Large Mammal	5	0.1%	0	0.0%	7.5
	Odocoileus virginianus	White-tailed Deer	5	0.1%	1	1.5%	152
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	18	0.4%	0	0.0%	31.4
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	58	1.2%	0	0.0%	17.9
	Sylvilagus sp.	Rabbit	5	0.1%	1	1.5%	9.9
	Rodentia	Rodent	3	0.1%	0	0.0%	0.3
	Arvicolinae	Vole, Lemming, and Muskrat	1	0.0%	1	1.5%	0.05
	Oryzomys sp.	Marsh Rat	1	0.0%	1	1.5%	0.05
Mammalia Total			**96**	**2.0%**	**4**	**6.2%**	**218.8**
Reptilia	Reptilia	Reptile	3	0.1%	0	0.0%	0.2
	Testudines	Turtle	104	2.2%	0	0.0%	48.2
	Chelydra serpentina	Snapping Turtle	1	0.0%	1	1.5%	3.2
	Apalone ferox	Soft-shelled Turtle	9	0.2%	1	1.5%	8.7
	Kinosternidae	Mud/Musk Turtle	186	3.9%	0	0.0%	20.25
	Kinosternon sp.	Mud Turtle	22	0.5%	4	6.2%	15.55
	Sternotherus sp.	Musk Turtle	18	0.4%	4	6.2%	3.35
	Serpentes	Snake	103	2.2%	1	1.5%	16.45
	Colubridae	Non-venomous snake	26	0.6%	1	1.5%	2.85
Reptilia Total			**472**	**10.0%**	**12**	**18.5%**	**118.75**
Vertebrata		UID Vertebrate	2073	43.9%	0	0.0%	166.95
Vertebrata			**2073**	**43.9%**	**0**	**0.0%**	**166.95**
Grand Total			**4719**	**100.0%**	**65**	**100.0%**	**726.75**

**a MNI count of 0 was used to avoid counting one individual multiple times*

Weathering

Weathering was present on 0.2% of all specimens from Feature 205, including both burnt and unburnt specimens (Table 7-3). Of all the classes, the most prevalent weathering was found in mammal specimens, where 11% showed evidence of weathering. Six percent (NISP = 286) of the total number of specimens were too covered in concretion or damaged to be able to determine the presence or absence of weathering.

Table 7-3. Weathered Specimens in Feature 205

Class	Scientific Name	Common Name	Sum of NISP
Actinopterygii	***Esox sp.***	Pickerel	2
Actinopterygii Total			**2**
Mammalia	**Mammalia (Large)**	Large Mammal	2
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	5
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	4
Mammalia Total			**11**
Reptilia	**Testudines**	Turtle	1
Reptilia Total			**1**
Grand Total			**14**

Cultural Modification

The only evidence of cultural modification on the Feature 205 specimens is burning. Only 12% of the total Feature 205 sample is burnt. Furthermore, only 7% of the total Feature 205 sample was burnt and able to be identified to at least class (Table 7-4). Of the identified specimens, fish make up 64.2% of the total burnt sample, followed by reptiles at 30.1%. The most abundant species of burnt fish was Gar (Table 7-5). Of the reptiles, the most abundant species was Mud/Musk turtle.

Table 7-4. Class NISP and MNI total for Burnt Specimens in Feature 205

Class	NISP	% NISP
Actinopterygii	215	64.2%
Amphibia	3	0.9%
Aves	3	0.9%
Mammalia	13	3.9%
Reptilia	101	30.1%
Grand Total	**335**	**100.0%**

Table 7-5. Absolute Frequencies of Burnt Vertebrate Fauna for Feature 205 of the Pre-Mt. Taylor component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	NISP	% NISP	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	171	28.6%	8.35
	Amia Calva	Bowfin	4	0.7%	0.3
	Lepisosteus sp.	Gar	25	4.2%	1.3
	Centrarchidae	Sunfish	2	0.3%	0.1
	Micropterus salmoides	Large-Mouth Bass	3	0.5%	0.25
	Lepomis sp.	Bream	3	0.5%	0.15
	Lepomis microlophus	Shellcracker	7	1.2%	0.6
Actinopterygii Total			**215**	**36.0%**	**11.05**
Amphibia	**Anura**	Frog	1	0.2%	0.05
	Siren sp.	Siren	2	0.3%	0.1
Amphibia Total			**3**	**0.5%**	**0.15**
Aves	**Aves**	Bird	2	0.3%	0.35
	Anatidae	Ducks, Geese, Swans	1	0.2%	0.2
Aves Total			**3**	**0.5%**	**0.55**
Mammalia	**Mammalia (Large)**	Large Mammal	1	0.2%	2.8
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	8	1.3%	3.6
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	4	0.7%	0.15
Mammalia Total			**13**	**2.2%**	**6.55**
Reptilia	**Testudines**	Turtle	28	4.7%	11.45
	Apalone ferox	Soft-shelled Turtle	2	0.3%	0.45
	Kinosternidae	Mud/Musk Turtle	47	7.9%	3.5
	Kinosternon sp.	Mud Turtle	1	0.2%	0.05
	Serpentes	Snake	15	2.5%	1.1
	Colubridae	Non-venomous snake	8	1.3%	0.5
Reptilia Total			**101**	**16.9%**	**17.05**
Vertebrata		UID Vertebrate	263	44.0%	23.8
Vertebrata Total			**263**	**44.0%**	**23.8**
Grand Total			**598**	**100.0%**	**59.15**

Feature 201 (8020-7870 cal BP)

Faunal Inventory

The total number of faunal specimens recovered from Feature 201 is 2127 specimens. The total number of specimens identified to order, family, genus, or species was 335. The remainder of the sample was composed of specimens identified to class (755 specimens) and unidentified fragments (1037 specimens) (Table 7-6, Table 7-7). Specimens from all five classes are represented in Feature 201. Identified specimens comprised 52.2% of the sample.

Excluding unidentified specimens, the combined contribution of fish NISP is 79.7%, making it the most numerous of all the represented taxa (Table 7-6). Fish are represented by six species, three genera, and two families. This class is primarily composed of small fish from the family Centrarchidae such as large-mouth bass and shellcracker. Gar is the next most numerous fish taxon according to NISP, but is only represented by one individual. Much like the Feature 205 results, this is likely due to the ease of identification of gar scales, which increased the total gar NISP. Bowfin was the next most numerous taxon, which again is likely due to unique texture of cranial fragments from this species and their ease of identification. Catfish, minnow, American eel, golden shiner, lake chubsucker, and pickerel were all present in the sample in very small numbers (Table 7-7).

The next most represented taxon is reptile (12.8%), which is represented by one species, two genera, and two families. The reptile sample was dominated by members of the family Kinosternidae and included both mud and musk turtles. The remainder of the reptile sample was comprised of snakes, including members of the non-venomous

Table 7-6. Class NISP and MNI total for Feature 201 (Burnt and Unburnt)

Class	NISP	% NISP	MNI	% MNI
Actinopterygii	869	79.7%	19	57.6%
Amphibia	3	0.3%	2	6.1%
Aves	4	0.4%	2	6.1%
Mammalia	75	6.9%	3	9.1%
Reptilia	139	12.8%	7	21.2%
Grand Total	**1090**	**100.0%**	**33**	**100.0%**

family Colubridae, all represented solely by vertebrae. A small portion of the sample comprised of very small numbers of carapace fragments from soft-shelled turtle.

Mammals represent 6.9% of the total identified NISP, and is composed of one identified genus, *Sylvilagus* (rabbit). *Sylvilagus* can include both cottontail and marsh rabbits, and both individuals present in the Feature 201 sample are represented only by skull fragments.

Birds and amphibians comprise 0.4% of the sample each. Birds are represented by one family (Anatidae) and one sub-family (Anatinae). The sole specimen identified to Anatinae, which includes all surface-feeding ducks, was composed of a coracoid fragment. Due to its size, a quadrate was identified to the family Anatidae, which can include ducks, geese, and swans, is likely from a duck. At least one individual, represented by a coracoid fragment, was only identifiable to the class Aves. Amphibians are represented nearly equally by frogs and sirens, and were primarily identified via vertebrae.

The total number of individuals within Feature 201 is 33 individuals. Of these, fish are the most numerous, comprising 57.6% of the sample. Reptiles are the next numerous species, making up 21.2% of the total number of individuals. No immature species were encountered within Feature 201 during analysis.

Table 7-7. Absolute and Relative Frequencies of All Vertebrate Fauna for Feature 201 of the Pre-Mt. Taylor Component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	686	32.3%	0	0.0%	30.45
	Amia Calva	Bowfin	24	1.1%	1	3.0%	3.45
	Lepisosteus sp.	Gar	61	2.9%	1	3.0%	2.3
	Ictaluridae	Catfish	6	0.3%	2	6.1%	0.55
	Anguilla rostrata	American Eel	1	0.0%	1	3.0%	0.05
	Centrarchidae	Sunfish	14	0.7%	0	0.0%	1.4
	Micropterus salmoides	Large-Mouth Bass	18	0.8%	4	12.1%	9.3
	Lepomis sp.	Bream	9	0.4%	5	15.2%	0.5
	Lepomis microlophus	Shellcracker	29	1.4%	1	3.0%	5.2
	Cypriniformes	Minnow	6	0.3%	1	3.0%	0.2
	Notemigonus crysoleucas	Golden Shiner	1	0.0%	1	3.0%	0.05
	Erimyzon sucetta	Lake Chubsucker	1	0.0%	1	3.0%	0.05
	Esox sp.	Pickerel	13	0.6%	1	3.0%	1.7
Actinopterygii Total			**869**	**40.9%**	**19**	**57.6%**	**55.2**
Amphibia	**Anura**	Frog	2	0.1%	1	3.0%	0.1
	Siren sp.	Siren	1	0.0%	1	3.0%	0.05
Amphibia Total			**3**	**0.1%**	**2**	**6.1%**	**0.15**
Aves	**Aves**	Bird	2	0.1%	1	3.0%	0.1
	Anatidae	Ducks, Geese, Swans	1	0.0%	0	0.0%	0.05
	Anatinae	Surface-feeding duck	1	0.0%	1	3.0%	0.05
Aves Total			**4**	**0.2%**	**2**	**6.1%**	**0.2**
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	24	1.1%	0	0.0%	8.15
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	42	2.0%	0	0.0%	11.85
	Sylvilagus sp.	Rabbit	8	0.4%	2	6.1%	3.85
	Rodentia	Rodent	1	0.0%	1	3.0%	0.05
Mammalia Total			**75**	**3.5%**	**3**	**9.1%**	**23.9**
Reptilia	**Reptilia**	Reptile	1	0.0%	0	0.0%	0.05
	Testudines	Turtle	5	0.2%	0	0.0%	1.35
	Apalone ferox	Soft-shelled Turtle	3	0.1%	1	3.0%	0.05
	Kinosternidae	Mud/Musk Turtle	87	4.1%	0	0.0%	4.6
	Kinosternon sp.	Mud Turtle	3	0.1%	3	9.1%	1.2
	Sternotherus sp.	Musk Turtle	1	0.0%	1	3.0%	0.05
	Serpentes	Snake	22	1.0%	1	3.0%	4.75
	Colubridae	Non-venomous snake	17	0.8%	1	3.0%	1.35

Table 7-7. continued.

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Reptilia Total			**139**	**6.5%**	**7**	**21.2%**	**13.85**
Vertebrata		UID Vertebrate	1037	48.8%	0	0.0%	48.85
Vertebrata Total			**1037**	**48.8%**	**0**	**0.0%**	**48.85**
Grand Total			**2127**	**100.0%**	**33**	**100.0%**	**142.15**

Weathering

Weathering was present on 3% of all specimens from Feature 201, including both burnt and unburnt specimens (Table 7-8). Of all the classes, the most proportionally prevalent weathering was found in mammal specimens, where 32% showed evidence of weathering. Ten percent (NISP = 230) of the total number of specimens were too covered in concretion or damaged to be able to determine the presence or absence of weathering.

Table 7-8. Weathered Specimens in Feature 201

Class	Scientific Name	Common Name	Sum of NISP
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	5
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	19
Mammalia Total			**24**
Vertebrata		UID Vertebrate	48
Vertebrata			**48**
Grand Total			**72**

Cultural Modification

The only evidence of cultural modification on the Feature 201 specimens is burning. Only 13% of the total Feature 201 sample is burnt. Furthermore, only 6% of the total Feature 201 sample was burnt and able to be identified to at least class. Of the identified specimens, fish make up 65% of the total burnt sample, followed by reptiles

Table 7-9. Class NISP for Burnt Specimens in Feature 201

Class	Sum of NISP	% of Total
Actinopterygii	92	65.7%
Amphibia	2	1.4%
Mammalia	11	7.9%
Reptilia	35	25.0%
Grand Total	**140**	**100.0%**

at 25.0% (Table 7-9). The most abundant species of burnt fish was gar, followed by shellcracker. Of the reptiles, the most abundant species was mud/musk turtle (Table 7-10).

Table 7-10. Absolute Frequencies of Burnt Vertebrate Fauna for Feature 201 of the Pre-Mt. Taylor component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	Sum of NISP	% of Total	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	72	25.1%	2.75
	Lepisosteus sp.	Gar	12	4.2%	0.35
	Ictaluridae	Catfish	1	0.3%	0.05
	Lepomis microlophus	Shellcracker	7	2.4%	0.6
Actinopterygii Total			**92**	**32.1%**	**3.75**
Amphibia	**Anura**	Frog	2	0.7%	0.1
Amphibia Total			**2**	**0.7%**	**0.1**
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	4	1.4%	1
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	7	2.4%	0.45
Mammalia Total			**11**	**3.8%**	**1.45**
Reptilia	**Testudines**	Turtle	1	0.3%	0.2
	Apalone ferox	Soft-shelled Turtle	1	0.3%	0.05
	Kinosternidae	Mud/Musk Turtle	24	8.4%	1.1
	Serpentes	Snake	6	2.1%	0.65
	Colubridae	Non-venomous snake	3	1.0%	0.25
Reptilia Total			**35**	**12.2%**	**2.25**
Vertebrata		UID Vertebrate	147	51.2%	6.85
Vertebrata Total			**147**	**51.2%**	**6.85**
Grand Total			**287**	**100.0%**	**14.4**

Feature 200 (7170–6970 cal BP)

Faunal Inventory

The total number of faunal specimens recovered from Feature 200 comes to 1977 specimens. The total number of specimens identified to order, family, genus, or species was 320. The remainder of the sample was composed of specimens identified to class (708 specimens) and unidentified fragments (949 specimens) (Table 7-11, 7-12).

Specimens from four classes (fish, reptile, mammal, and amphibian) are represented in Feature 200. Identified specimens composed of 52% of the sample. Excluding unidentified specimens, the combined contribution of fish taxa is 77.3%, making it the most numerous of all the represented taxa (Table 7-11). Fish are represented by four species, two genera, and two families. Nearly all the identified fish are from the sunfish family, and are primarily represented by large-mouth bass and shellcracker (Table 7-12). Black crappie, another member of the sunfish family, is present in a very small amount. Gar is the next most represented taxa according to NISP but, again, this is likely due to the ease of identification of gar scales, which comprised approximately half of all the identified gar specimens. Bowfin and minnows are present in the sample in lesser amounts.

The next most represented taxon is reptile (14.4%), which is represented by one species, three genera, and two families. The reptile sample was dominated by members of the family Kinosternidae and included both mud and musk turtles. The remainder of the reptile sample was comprised of snakes, including members of the non-venomous family Colubridae, all represented solely by vertebrae. One specimen, a single vertebra,

Table 7-11. Class NISP and MNI total for Feature 200 (Burnt and Unburnt)

Class	NISP	% NISP	MNI	% MNI
Actinopterygii	795	77.3%	22	71.0%
Amphibia	3	0.3%	1	3.2%
Mammalia	82	8.0%	2	6.5%
Reptilia	148	14.4%	6	19.4%
Grand Total	**1028**	**100.0%**	**31**	**100.0%**

was identified to the genus water snake (Nerodia). A single carapace fragment represented the sole contribution of soft-shelled turtle to the sample.

Mammals represented 8.0% of the sample, and the only identified taxon was white-tailed deer, which was represented by a mandible and metacarpal fragment. Amphibians comprised the remainder of the sample at 0.3% and were only represented by sirens. No birds were identified within Feature 200.

The total number of individuals within Feature 200 is 31 individuals. Of these, fish are the most numerous, comprising 71% of the sample, and are dominated by shellcracker. Reptiles are the next numerous species, making up 19.4% of the total number of individuals.

Table 7-12. Absolute and Relative Frequencies of all Vertebrate Fauna for Feature 200 of the Mt. Taylor Component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	627	31.7%	0	0.0%	42.75
	Amia Calva	Bowfin	8	0.4%	1	3.2%	0.85
	Lepisosteus sp.	Gar	41	2.1%	1	3.2%	9.2
	Ictaluridae	Catfish	3	0.2%	2	6.5%	0.75
	Centrarchidae	Sunfish	33	1.7%	0	0.0%	3.6
	Micropterus salmoides	Large-Mouth Bass	10	0.5%	2	6.5%	1.95
	Lepomis sp.	Bream	9	0.5%	4	12.9%	0.3
	Lepomis microlophus	Shellcracker	56	2.8%	10	32.3%	15.75
	Pomoxis nigromaculatus	Black Crappie	1	0.1%	1	3.2%	0.05
	Cypriniformes	Minnow	7	0.4%	1	3.2%	0.35
Actinopterygii Total			**795**	**40.2%**	**22**	**71.0%**	**75.55**
Amphibia	***Siren sp.***	Siren	3	0.2%	1	3.2%	0.95
Amphibia Total			**3**	**0.2%**	**1**	**3.2%**	**0.95**
Mammalia	***Odocoileus virginianus***	White-tailed Deer	2	0.1%	1	3.2%	10.2
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	20	1.0%	0	0.0%	26
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	60	3.0%	1	3.2%	6.15
Mammalia Total			**82**	**4.1%**	**2**	**6.5%**	**42.35**
Reptilia	**Reptilia**	Reptile	1	0.1%	0	0.0%	0.05
	Testudines	Turtle	12	0.6%	0	0.0%	13.2
	Apalone ferox	Soft-shelled Turtle	1	0.1%	1	3.2%	0.3
	Kinosternidae	Mud/Musk Turtle	90	4.6%	0	0.0%	4.65
	Kinosternon sp.	Mud Turtle	5	0.3%	1	3.2%	1.55
	Sternotherus sp.	Musk Turtle	2	0.1%	1	3.2%	0.4
	Serpentes	Snake	24	1.2%	1	3.2%	2
	Colubridae	Non-venomous snake	12	0.6%	1	3.2%	8.9
	Nerodia sp.	Water Snake	1	0.1%	1	3.2%	0.3
Reptilia Total			**148**	**7.5%**	**6**	**19.4%**	**31.35**
Vertebrata		UID Vertebrate	949	48.0%	0	0.0%	57.6
Vertebrata Total			**949**	**48.0%**	**0**	**0.0%**	**57.6**
Grand Total			**1977**	**100.0%**	**31**	**100.0%**	**207.8**

Weathering

Weathering was present on 3% of all specimens from Feature 200, including both burnt and unburnt specimens. Of all the classes, the most proportionally prevalent weathering was found in mammal specimens, where 13% showed evidence of weathering (Table 7-13). Five per cent (NISP = 113) of the total number of specimens were too covered in concretion or damaged to be able to determine the presence or absence of weathering.

Table 7-13. Weathered Specimens in Feature 200

Class	Scientific Name	Common Name	Sum of NISP
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	21
	Lepisosteus sp.	Gar	1
	Lepomis microlophus	Shellcracker	1
Actinopterygii Total			**23**
Mammalia	***Odocoileus virginianus***	White-tailed Deer	2
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	8
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	1
Mammalia Total			**11**
Reptilia	**Reptilia**	Reptile	1
	Kinosternidae	Mud/Musk Turtle	1
Reptilia Total			**2**
(blank)	**Vertebrata**	UID Vertebrate	35
(blank) Total			**35**
Grand Total			**71**

Cultural Modification

Evidence of cultural modification in Feature 200 includes burning and evidence of tool manufacture. Only 7% of the total Feature 200 sample is burnt. Furthermore, only 3% of the total Feature 200 sample was burnt and able to be identified to at least class. Of the identified specimens, fish make up 64.4% of the total burnt sample,

Table 7-14. Class NISP for Burnt Specimens in Feature 200

Class	Sum of NISP	% of Total
Actinopterygii	47	64.4%
Mammalia	6	8.2%
Reptilia	20	27.4%
Grand Total	**73**	**100.0%**

followed by reptiles at 27.4% (Table 7-14). The most abundant species of burnt fish was gar and shellcracker (Table 7-15). Of the reptiles, the most abundant species was mud/musk turtle.

Table 7-15. Absolute Frequencies of Burnt Vertebrate Fauna for Feature 200 of the Mt. Taylor component of Silver Glen Springs (8LA1-West).

Class	Scientific Name	Common Name	Sum of NISP	% of Total	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	40	27.8%	1.7
	Lepisosteus sp.	Gar	3	2.1%	0.1
	Micropterus salmoides	Large-Mouth Bass	1	0.7%	0.05
	Lepomis microlophus	Shellcracker	3	2.1%	0.4
Actinopterygii Total			**47**	**32.6%**	**2.25**
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	1	0.7%	3.3
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	5	3.5%	0.4
Mammalia Total			**6**	**4.2%**	**3.7**
Reptilia	**Testudines**	Turtle	1	0.7%	0.05
	Kinosternidae	Mud/Musk Turtle	15	10.4%	0.8
	Serpentes	Snake	3	2.1%	0.15
	Colubridae	Non-venomous snake	1	0.7%	0.05
Reptilia Total			**20**	**13.9%**	**1.05**
Vertebrata		UID Vertebrate	71	49.3%	4.5
Vertebrata Total			**71**	**49.3%**	**4.5**
Grand Total			**144**	**100.0%**	**11.5**

Feature 200 contained the only evidence of bone tool manufacture. This specimen is represented by the distal condyle of the metacarpal of a white-tailed deer (*Odocoileus virginianus*) (Specimen ID #113.1). The modifications appear consistent with manufacturing debris from ‘groove and snap’ technology. Using the ‘groove and snap’ method, a linear, transverse groove was carved around the diameter of a metapodial at the base of the proximal and distal condyles and pressure was applied to snap the condyles from the shaft. On this specimen, it does not appear that the groove on the anterior side of the metacarpal was deep enough when the element was snapped. As a result, a portion of the anterior shaft was left attached to the distal condyles and the groove where the element was supposed to snap remains visible. The ‘groove and snap’ method is generally used to turn metapodials into long tubes, which can both expose marrow cavities and allow the metapodial to be further refined into other tools such as awls or handles for scrapers (Byrd 2011; Coughlin 1996).

Figure 7-1. Specimen #113.1, Anterior View

Slot Trench 2 (Pre-Mt. Taylor)

Faunal Inventory

The total number of faunal specimens recovered from Slot Trench 2 comes to 367 specimens. The total number of specimens identified to order, family, genus, or species was 186. The remainder of the sample was composed of specimens identified to class (40 specimens) and unidentified fragments (141 specimens). Specimens from all five classes are represented in Slot Trench 2 (Table 7-16, 7-17). Identified specimens composed of 61.5% of the sample.

Excluding unidentified specimens, the combined contribution of reptile taxa is 46.5%, making it the most numerous of all the represented taxa (Table 7-16). Reptiles are comprised of one species and two genera. Most of the identified reptile NISP belonged to either mud or musk turtles. Snakes were the next largest contribution to the sample, and the very small remainder was composed of soft-shelled turtle.

Table 7-16. Class NISP and MNI total for Slot Trench 2 (Burnt and Unburnt)

Class	NISP	% NISP	MNI	% MNI
Actinopterygii	83	36.7%	14	50%
Amphibia	6	2.7%	2	7.1%
Aves	5	2.7%	2	7.1%
Mammalia	27	11.9%	2	7.1%
Reptilia	105	46.5%	8	28.6%
Grand Total	**226**	**100.0%**	**28**	**100.0%**

The next most represented taxa are fish (36.7%), which is represented in large part by members of the sunfish family, primarily shellcracker with a small contribution of large-mouth bass. Gar were the next most common fish according to NISP. Bowfin made up a small portion of the fishes, and minnows, catfish, and mullet made an even smaller contribution.

Mammals were the next most represented taxon at 11.9%, and were composed of one species, white-tailed deer, and one genus, marsh rat. Both taxa were represented only by a single specimen. White-tailed deer were represented by a humerus fragment and marsh rat by a mandible.

Birds comprised 2.7% of the sample, and were represented by one species and one family. A scapula and sternum represented the two specimens from the family Anatidae, which can include geese, ducks, and swans. Due to the size of the specimens, it's likely that both are from ducks, rather than geese or swans. A pelvis and ulna represent the two specimens from wild turkey. Amphibians make up the remainder of the sample at 2.7%, and are represented by sirens and frogs. (Table 7-17)

The total number of individuals within Slot Trench 2 is 28 individuals. Of these, fish are the most numerous, comprising 50% of the sample. Reptiles are the next numerous species, making up 28% of the total number of individuals. No immature species were encountered within Slot Trench 2 during analysis.

Table 7-17. Absolute and Relative Frequencies of all Vertebrate Fauna for Slot Trench 2 (8LA1-West).

Class	Scientific Name	Common Name	NISP	% NISP	MNI	% MNI	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	17	4.6%	0	0.0%	9.3
	Amia Calva	Bowfin	6	1.6%	1	3.6%	0.65
	Lepisosteus sp.	Gar	10	2.7%	1	3.6%	2.75
	Ictaluridae	Catfish	1	0.3%	1	3.6%	0.05
	Mugil sp.	Mullet	1	0.3%	1	3.6%	0.05
	Centrarchidae	Sunfish	19	5.2%	0	0.0%	5.75
	Micropterus salmoides	Large-Mouth Bass	6	1.6%	2	7.1%	8.45
	Lepomis sp.	Bream	6	1.6%	0	0.0%	7.6
	Lepomis microlophus	Shellcracker	16	4.4%	7	25.0%	17.5
	Cypriniformes	Minnow	1	0.3%	1	3.6%	0.2
Actinopterygii Total			**83**	**22.6%**	**14**	**50.0%**	**52.3**
Amphibia	**Anura**	Frog	2	0.5%	1	3.6%	0.1
	Caudata	Salamander	2	0.5%	0	0.0%	0.6
	Siren sp.	Siren	2	0.5%	1	3.6%	0.3
Amphibia Total			**6**	**1.6%**	**2**	**7.1%**	**1**
Aves	**Aves**	Bird	1	0.3%	0	0.0%	0.4
	Anatidae	Ducks, Geese, Swans	2	0.5%	1	3.6%	8.1
	Meleagris gallopavo	Turkey	2	0.5%	1	3.6%	8
Aves Total			**5**	**1.4%**	**2**	**7.1%**	**16.5**
Mammalia	***Odocoileus virginianus***	White-tailed Deer	1	0.3%	1	3.6%	43.3
	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	7	1.9%	0	0.0%	16.5
	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	15	4.1%	0	0.0%	10.5
	Rodentia	Rodent	3	0.8%	0	0.0%	0.3
	Oryzomys sp.	Marsh Rat	1	0.3%	1	3.6%	0.05
Mammalia Total			**27**	**7.4%**	**2**	**7.1%**	**70.65**
Reptilia	**Testudines**	Turtle	65	17.7%	0	0.0%	41.55
	Apalone ferox	Soft-shelled Turtle	3	0.8%	1	3.6%	7.2
	Kinosternon sp.	Mud Turtle	6	1.6%	2	7.1%	2.6
	Sternotherus sp.	Musk Turtle	10	2.7%	4	14.3%	2.65
	Serpentes	Snake	21	5.7%	1	3.6%	6.35
Reptilia Total			**105**	**28.6%**	**8**	**28.6%**	**60.35**
Vertebrata		UID Vertebrate	141	38.4%	0	0.0%	25.9
Vertebrata Total			**141**	**38.4%**	**0**	**0.0%**	**25.9**
Grand Total			**367**	**100.0%**	**28**	**100.0%**	**226.7**

Weathering

Weathering was present on 0.5% of all specimens from Slot Trench 2, including both burnt and unburnt specimens. The only class which had specimens with weathering were mammals, where 7% showed evidence of weathering (Table 7-18). Thirty-eight percent (NISP = 141) of the total number of specimens were too covered in concretion or damaged to be able to determine the presence or absence of weathering.

Table 7-18. Weathered Specimens in Slot Trench 2

Class	Scientific Name	Common Name	Sum of NISP
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	2
Mammalia Total			**2**
Grand Total			**2**

Cultural Modification

The only evidence of cultural modification on the Slot Trench 2 specimens is burning. Only 8% of the total Slot Trench 2 sample is burnt. Furthermore, only 4% of the total Slot Trench 2 sample was burnt and able to be identified to at least class. Of the identified specimens, reptiles make up 73.3% of the total burnt sample, followed by fish at 20.0% (Table 7-19). Reptiles were only represented by unidentified turtle, and the only identified species of burnt fish was gar (Table 7-20).

Table 7-19. Class NISP for Burnt Specimens in Slot Trench 2

Class	Sum of NISP	% of Total
Actinopterygii	3	20.0%
Mammalia	1	6.7%
Reptilia	11	73.3%
Grand Total	**15**	**100.0%**

Table 7-20. Absolute Frequencies of Burnt Vertebrate Fauna for Slot Trench 2 (8LA1-West).

Class	Scientific Name	Common Name	Sum of NISP	% of Total	Weight (g)
Actinopterygii	**Actinopterygii**	Ray-Finned Fish	1	3.2%	0.4
	Lepisosteus sp.	Gar	2	6.5%	0.25
Actinopterygii Total			**3**	**9.7%**	**0.65**
Mammalia	**Mammalia (Med.-Lg.)**	Med.-Lg. Mammal	1	3.2%	0.7
Mammalia Total			**1**	**3.2%**	**0.7**
Reptilia	**Testudines**	Turtle	11	35.5%	8.8
Reptilia Total			**11**	**35.5%**	**8.8**
Vertebrata		UID Vertebrate	16	51.6%	2.8
Vertebrata Total			**16**	**51.6%**	**2.8**
Grand Total			**31**	**100.0%**	**12.95**

Conclusion

The results of the faunal analysis on all three pit deposits highlights remarkable similarities between the deposits (Figure 7-2). In all cases, fish dominated the sample, both in NISP and MNI. The types of fish present are typically biased towards those from the family Centrarchidae, including large-mouth bass and bream. There appears to be an increase in the number of shellcracker in the later deposits compared to the earlier ones. Reptiles were the next most abundant class in all three pit deposits. Weathering and burning were present in all the analyzed samples, but in relatively smaller amounts.

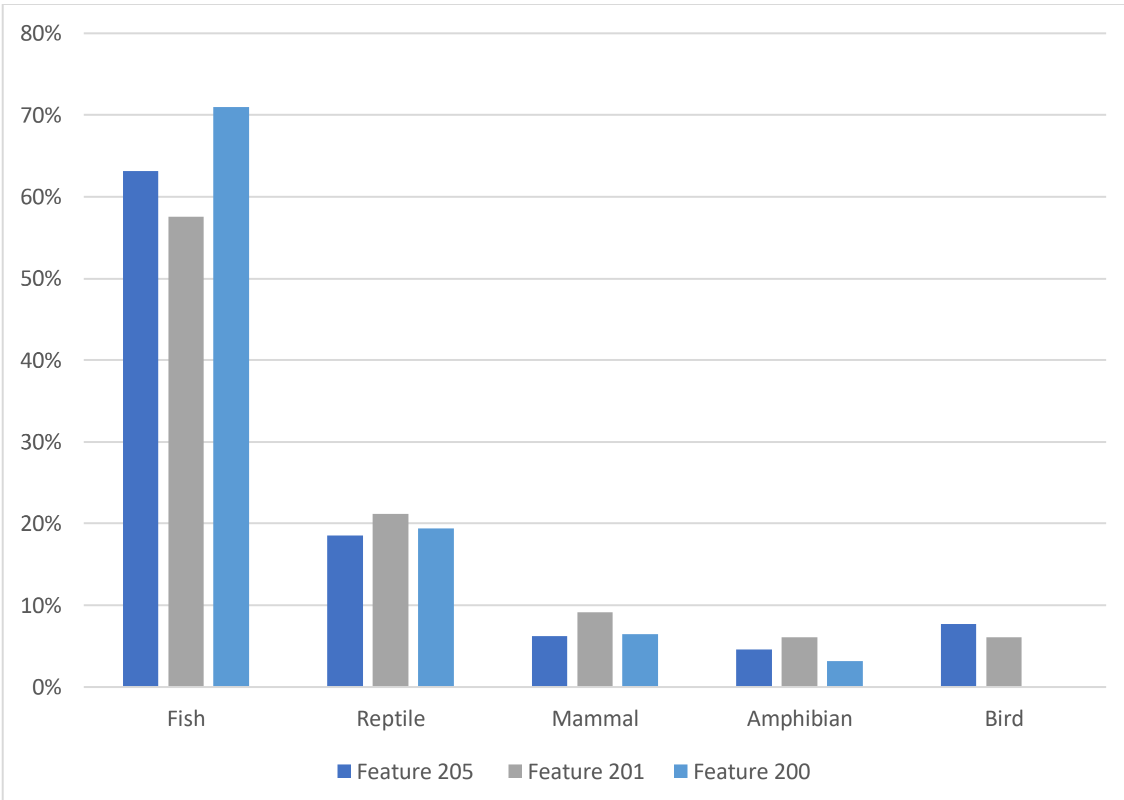

Figure 7-2. Comparison of Class MNI Proportions in Features 205, 201, and 200

CHAPTER 8

RESULTS OF SECONDARY ANALYSES

This chapter places the results of the faunal analysis into context, and reports on secondary analyses. Specifically, I examine three lines of inquiry. First, I present the results from my environmental analyses on the three pit deposits with implications regarding habitat and environment at Silver Glen Springs between 8500–6900 cal BP. I then discuss my conclusions regarding the Silver Glen Springs catchment area, the seasonality of the site, and the function of the pit deposits. I then contrast my findings with those from a contemporaneous site, Windover, and two later deposits from Silver Glen Springs before providing richness, diversity, and equitability calculations for all the discussed samples.

Species Habitats at the Start of the Middle Holocene (8900–7400 cal BP)

Remarkably, the species diversity present in all the analyzed features closely resembles the modern-day faunal assemblage at Silver Glen Springs (Appendix 1 and 2). This supports an environmental reconstruction of early Middle Archaic Silver Glen Springs as a riverine habitat with slow-moving, nutrient-filled freshwater with possible access to a larger body of water. This reconstruction supports the assertion that Silver Glen Springs was active and produced enough water to support diverse freshwater riverine/lacustrine communities by at least 8500 cal BP. This section details the birds, mammals, reptiles, amphibians, fish, and invertebrates found in the analyzed contexts which support my conclusion.

Of the birds recovered from the analyzed contexts, almost all were waterfowl. Two species from the family Rallidae (crakes, coots, and gallinules) were identified from Feature 205, the oldest of the analyzed features. American Coot (*Fulica Americana*) is a migratory bird that, while present in Florida year-round, participates in an annual migration during the winter months, travelling from throughout North America towards temperate areas like Florida. American coots feed on aquatic plants, small aquatic animals, and insects, and are commonly found near reed-ringed lakes and ponds, marshes, and slow-moving rivers. American coots live in large groups. The common gallinule (*Gallinula galeata*) also lives year-round in Florida and is often found near marshes, ponds, and wetlands. This species consumes both terrestrial and aquatic vegetation alongside small aquatic insects and invertebrates. Additionally, the presence of dabbling ducks (Anatinae) and, more specifically, the presence of members of the mallard, teal, and pinwheel genus (*Anas sp.*) supports a reconstruction of the area around Silver Glen Springs as one with abundant vegetation and prey species such as invertebrates and insects.

One species of identified riverine mammal and several species of identified reptile further supports this reconstruction. The marsh rice rat (*Oryzomys palustris*) is a species of semi-aquatic rodent often found in wetland environments. Mud turtles (*Kinosternon sp.*), regardless of species, are often found in quiet bodies of freshwater which have soft bottoms. These habitats can include swamps, streams, and ponds. Mud turtles are omnivorous, feeding on both aquatic and terrestrial vegetation, invertebrates, and insects. Musk turtles (*Sternotherus sp*.) are found in any type of permanent, freshwater body of water, and appear to prefer those with muddy bottoms. Species from this genus release an odorous, defensive liquid from their musk glands when threatened.

Musk turtles are known to feed on small fish, aquatic plants, invertebrates, and insects. The genus primarily stays in or immediately adjacent to a body of water.

The common snapping turtle (*Chelydra serpentina*) is found in freshwater or brackish shallow ponds and streams. This species prefers water habitats with muddy bottoms and abundant vegetation. They have been known to prey on invertebrates, fish, frogs, reptiles, birds and mammals, but also subsist on aquatic vegetation. The aquatic soft-shelled turtle (*Apalone ferox*) prefer slow-moving, mud or sand-bottomed, freshwater streams, ponds, and lakes. Soft-shelled turtles subsist primarily on aquatic invertebrates, insects, amphibians, and fish.

Sirens (*Siren sp.*) are a genus of nocturnal salamander that live exclusively in aquatic freshwater environments such as ponds, swamps, and streams. Adult species spend most of their time at the bottom of their aquatic environments, often hiding within sunken logs, branches, and dense aquatic vegetation. Sirens prey on insects, aquatic invertebrates, and small fish.

The presence of several predatory freshwater fish species, bowfin (*Amia calva*), gar (*Lepisosteous sp.*), large-mouth bass (*Micropterus salmoides*), pike/pickerel (*Esox sp*.), suggests that the aquatic habitat around Silver Glen Springs had submerged vegetation, and at least some submerged logs, branches, or rocks, from which these species could ambush prey. These predators often target other species of fish, frogs, salamanders, invertebrates, snakes, and small mammals.

Several species of prey fish commonly found within lakes, ponds, and slow-moving streams are also present within the analyzed faunal samples. Bluegill (*Lepomis macrochirus*) and black crappie (*Pomoxis nigromaculatus*) are often found within wellvegetated areas at the edges of these habitats. Bluegill will often move to deeper open waters as they grow. Both these species consume aquatic insect larvae, invertebrates, and other small fish. Of note is the presence of Redear sunfish (*Lepomis microlophus*), a species of freshwater, specialized molluscivores also known as Shellcracker. They feed primarily on aquatic snails using specially adapted pharyngeal teeth, which allow the species to break through the hard exoskeletons or shells of invertebrates. They tend to congregate near logs or patches of aquatic vegetation.

Lake Chubsucker (*Erimyzon sucetta*) and Golden Shiner (*Notemigonus crusoleucas*), however, are both rarely found in streams, preferring to inhabit the calmer waters of lakes and ponds. Both species prefer elevated levels of vegetative cover and are omnivorous, feeding on insects, aquatic plants, invertebrates, and algae.

I identified two migratory fishes in the sample. American eel (*Anguilla rostrata*) is a nocturnal, catadromous species of fish (migrating from freshwater to the sea to spawn) that hides amongst masses of plants or within burrows at the base of rivers or silt-bottomed lakes. American eels migrate to the coast during spring, and return to freshwater in the fall. Specimens from the genus *Mugil* (mullet) were also present in the sample, which are also catadromous species that can live in a wide variety of both freshwater, estuarine, and marine habitats. Mullet spawning occurs between October to January in saltwater environments.

A few terrestrial species were also identified during analysis. Wild turkey (*Meleagris gallopavo*) prefer areas with a mix of forested areas, scattered pastures, and marshes. They forage for nuts, berries, and insects, and are preyed upon by a wide variety of species. White-tailed deer (*Odocoileus virginianus*) are found in a wide variety of habitats, including forests, prairies, and wetlands. White-tailed deer browse entirely on terrestrial plant matter. Due to their size, white-tailed deer are primarily targeted by apex predators such as wolves, large cats, alligators, and humans. The final terrestrial genus identified in the sample are cottontails (*Sylvilagus*). Two potential species of cottontails exist in the area around Silver Glen Springs today: the marsh rabbit (*Sylvilagus palustris*) and the eastern cottontail (*Sylvilagus floridianus*). As the common names imply, both species inhabit markedly different habitats. The marsh rabbit is predominantly found in marshes and swamps, and is an effective swimmer. The eastern cottontail, however, lives in open, grassy areas with abundant terrestrial vegetation. Unfortunately, I was not able to further identify any *Sylvilagus* specimens to the species level.

While this thesis does not analyze them in detail, several species of freshwater gastropod and bivalve were also recovered during the excavation of all the contexts analyzed in this thesis. These species also provide information regarding the habitat at Silver Glen Springs. Of the gastropods, the Florida Apple Snail (*Pomacea paludosa*), Banded Mystery Snail (*Viviparus georgianus*), Mesa Rams-Horn (*Planorbella scalaris*), and Rasp Elimia (*Elimia floridensis*) are all found in the analyzed features. These species require macrophytes and nutrient-rich water for subsistence. In addition, the Banded Mystery Snail lives in mud-bottomed, slow moving rivers or lakes. Florida apple snails are amphibious, and require emergent riverine vegetation upon which they lay their eggs.

The diversity of invertebrate species, in addition to the presence of their predator vertebrate communities, help build a picture of Silver Glen Springs as a rich environment capable of supporting diverse faunal communities.

Human Selection and Seasonality

Most of the species present in all the analyzed pit deposits are riverine species such as fish, waterfowl, amphibians, and aquatic reptiles that would have been found in and immediately adjacent to Silver Glen Springs. Even species such as white-tailed deer and turkey, which are not riverine species, likely also used Silver Glen Springs as part of their habitat. These findings indicate that the Silver Glen population collected from amongst immediately available species. There does not appear to be robust evidence that the Silver Glen Springs population throughout the early Middle Archaic and early Mt. Taylor periods targeted certain species or travelled far distances to procure foods.

I uncovered very little data useful to identifying the season of use at Silver Glen Springs during analysis. Identifying seasonality in Florida is difficult, as many species have resident populations present in the region year-round. That said, the relative abundance of ducks compared to other species of bird may indicate fall/winter occupation, as these species tend to congregate in greater numbers in Florida during these seasons. American eels also migrate to freshwater from estuaries and coastal areas during the fall to winter months. Mullet, in contrast, migrate far off the coast of Florida to spawn during the fall and winter months and would likely be present in lesser numbers within the St. Johns River during this period.

The diversity and taphonomy of the species within all the pit deposits appear to indicate that the deposits contained subsistence or domestic byproducts. I believe that the highly fragmented yet well preserved nature of all three deposits indicates that the faunal remains in all three deposits were relatively rapidly emplaced and that the bulk of fragmentation occurred prior to deposition. If the bulk of fragmentation occurred before deposition, I would expect elevated levels of weathering, gnawing, and other natural taphonomic indicators, indicating that the specimens were exposed for an extended period. The weathering present on only a small percentage of the total sample (2%–3% between all the pit deposits) indicates to me that these specimens may represent refuse that was collected and deposited separately to the rest of the samples. This is supported by the inclusion of a modified metapodial in Feature 200, which provides unambiguous evidence of discard from tool manufacture. If this is the case, these weathered specimens may represent domestic cleaning activities.

My conclusions that the pit deposits represent subsistence or domestic refuse do not preclude that the deposits are more symbolic in nature. Supporting this is the presence of a complete unburned individual from the dabbling duck family (*Anatinae sp.)* in Feature 205. This individual is represented by three paired appendicular elements (the ulnas, humeri, and femurs) and paired coracoids (part of the axial skeleton). Based on their size, two unpaired elements (a furcula and tibiotarsus) are likely also from the same individual. Based on the relative completeness of this individual, it is highly likely that additional, albeit unidentified elements are present in the sample and the individual was complete when it was deposited in the pit. The individual shows no evidence of cultural modifications such as cut marks or burning, indicating that it was likely placed in the deposit whole. This may indicate that the individual was not used for subsistence purposes.

Comparison to Faunal Assemblages from Contemporaneous Sites

The only known contemporaneous faunal assemblage to the Silver Glen Springs pits analyzed for this thesis come from the Windover site. Windover is located approximately 70 miles away from Silver Glen Springs near the coast of Florida. Excavations at Windover produced faunal data using two methods (Nabergall-Luis 1990). The first was through general level recovery, where all visible faunal remains were collected during excavation. In some circumstances, such as when an anomalous feature or burial was encountered, the recovered matrix was water-screened through 1/4" mesh. During the second excavation season (1985–1986), T. Stone, the lab director at the time, decided to discard any duplicate faunal elements from the general excavation levels regardless of size or side, leaving only single representatives of each element. The second method was the recovery of bulk column samples from across the site. A total of 16 column samples were recovered over the course of three field seasons at Windover between 1984–1987. Each column unit measured 20x20 cm and were located across each of the excavation areas. These column samples were removed in bulk in 5–10 cm increments and were water-screened through nested 1/4", 1/8" and 1/16" mesh. All the vertebrate fauna remains date between 8000–7300 years B.P. (Nabergall-Luis 1990)

I provide here the results of Nabergall-Luis' (1990) results from the Windover column samples (Table 8-1). I am focusing on the column samples, rather than the general recovery samples, for two reasons. First, the recovery method for the column samples ensures an accurate depiction of the types of faunal remains at the Windover

Table 8-1. Sum of Class MNI for Features 205, 201, 200 and Windover Column Samples (condensed from Nabergall-Luis 1990)

	Feature 205		**Feature 201**		**Feature 200**		**Windover Column Samples**	
Class	**MNI**	**% MNI**	**MNI**	**% MNI**	**MNI**	**% MNI**	**MNI**	**% MNI**
Actinopterygii	41	63.1%	19	57.6%	22	71.0%	244	79.7%
Amphibia	3	4.6%	2	6.1%	1	3.2%	17	5.6%
Aves	5	7.7%	2	6.1%	0	0.0%	4	1.3%
Mammalia	4	6.2%	3	9.1%	2	6.5%	8	2.6%
Reptilia	12	18.5%	7	21.2%	6	19.4%	33	10.8%
Grand Total	**65**	**100.0%**	**33**	**100.0%**	**31**	**100.0%**	**306**	**100.0%**

site and more closely matches the recovery strategy for the Silver Glen Springs pit deposits. Secondly, as there is no evidence for any type of cultural activity within the column samples, Nabergall-Luis believed that these samples represented the natural diversity of animals at the Windover pond. If this is correct, the column samples are an important source of environmental data from this period and, despite the distance between Silver Glen Springs and Windover, some connections regarding the environments between the two sites can be made.

The faunal assemblage at Silver Glen Springs shows many similarities to the fauna found within the Windover column samples, despite the latter being natural rather than cultural. Of the fish, catfish (*Ictalurus spp*), bream (*Lepomis spp*) and killifishes (*Cyprinodontidae*) dominate the Windover sample. The assemblage composition of fishes is very similar to Silver Glen Springs, and includes gar (*Lepisosteus spp.*), bowfin (*Amia Calva*), largemouth bass (*Micropterus salmoides*), Golden Shiner (*Notemigonus crysoleucas*), and chain pickerel (*Esox niger*). Several species of fish were identified by Nabergall-Luis (1990) that were not identified in the Silver Glen Springs, including Florida flagfish (*Jordanella floridae*) and molly (cf. *Poecilia spp.*). Like the Silver Glen

Springs sample, amphibians comprised both sirens (*Siren lacertina*) and frogs (*Ranidae*). Apart from American alligator (*Alligator mississippiensis*), all the reptiles found in the Windover column samples were identified within the Silver Glen Spring deposits (Appendix 3).

The similarity between the species diversity within the Windover column samples and the pit deposits at Silver Glen shared a similar environment, despite their geographical distance. Nabergall-Luis (1990) uses the Windover faunal data to reconstruct the site as a still, freshwater pond with abundant emergent and submerged vegetation, open areas, and logs, a very similar environment to the one I have reconstructed for Silver Glen Springs in this thesis. These results highlight the environmental similarities between freshwater habitats in at least Brevard and Marion counties during the early Middle Archaic period.

Comparison to Faunal Assemblages from Subsequent Periods

Two previous analyses of faunal assemblages from Silver Glen Springs currently exist, both conducted on the remnants of the 8MR123 shell mound. The first analysis that has been conducted at Silver Glen Springs was conducted by Meggan Blessing in 2011 on samples recovered from intact mining escarpment at 8MR123. I summarize here the results of her analysis on a series of deposits dating between 6780–4620 cal BP (Tables 8-2 and 8-3). Blessing (2011:119) combined all the documented species between the analyzed Mt. Taylor period deposits into a single tabulated list. This list can be found in Appendix 5.

The second analysis was conducted by William Stanton (1995) as part of a Master's thesis. Stanton examined two column samples (Test Unit 1 and 2) from an intact portion of 8MR123 which dates between 5620–4320 cal BP (3670–2370 uncal BP). Stanton, for his thesis, analyzed levels 11 and 20 of Test Unit 1 and 4 and 10 of Test Unit 2. Previously, levels 7, 15, and 30 were analyzed by Marrinan et al. (1990) for Test Unit 1 and 7, 13, and 16 for Test Unit 2. Stanton provided data tables for all the analyzed contexts for Test Unit 1 within his thesis. To both provide a generalized summary of the types of species targeted between 5620–4320 cal BP and to facilitate ease of comparison with my own data, I've summarized the data from all contexts for Test Unit 1 and a complete table for all the species found in Test Unit 1 can be found in Appendix 4.

Together, Feature 200 and the contexts analyzed by Blessing (2011) and Stanton (1995) span nearly the entirety of the Mt. Taylor period. Features 205 and 201, in contrast, date to the early Middle Archaic. I discuss here the similarities between Feature 200 and Blessing and Stanton's samples and compare these to Features 205 and 201.

The fish in Blessing's (2011) sample are dominated in near-equal parts by bowfin, shellcracker, and bream. Stanton's (1995) sample, in comparison, is composed primarily of shellcracker/redear sunfish (*Lepomis microlophus*), with smaller contributions by largemouth bass, catfish, and gar. Shellcracker and unidentified species of bream also dominate the Feature 200 sample. Largemouth bass appear to be more common in Features 201 and 205, which date to the early Middle Archaic and both features are comprised primarily of bream and largemouth bass.

Table 8-2. Sum of Class MNI for Features 205, 201, 200, and 8MR123 samples (condensed from Blessing 2011 and Stanton 1995)

Time Period	**Early Middle Archaic**				**Mt. Taylor**					
Feature	**Feature 205 (8540–8380 cal BP)**		**Feature 201 (8020–7870 cal BP)**		**Feature 200 (7170–6970 cal BP)**		**8MR123 (6780–4620 cal BP) (Blessing 2011)**		**8MR123 (5620–4320 cal BP) (Stanton 1995)**	
Class	**MNI**	**% MNI**	**MNI**	**% MNI**	**MNI**	**% MNI**	**MNI**	**% MNI**	**MNI**	**% MNI**
Actinopterygii	41	63.1%	19	57.6%	22	71.0%	102	72.9%	74	52.1%
Amphibia	3	4.6%	2	6.1%	1	3.2%	3	2.1%	5	3.5%
Aves	5	7.7%	2	6.1%	0	0.0%	4	2.9%	6	4.2%
Mammalia	4	6.2%	3	9.1%	2	6.5%	10	7.1%	17	12.0%
Reptilia	12	18.5%	7	21.2%	6	19.4%	21	15.0%	40	28.2%
Grand Total	**65**	**100.0%**	**33**	**100.0%**	**31**	**100.0%**	**140**	**100.0%**	**142**	**100.0%**

Sharks (*Carcharhinidae*) are absent in all the deposits analyzed by myself, Blessing, and Stanton. The Silver Glen Spring faunal deposits also appear to have consistently included rodents, but I am unsure if their inclusion is cultural or natural. However, there does appear to be an increase in the use of mammals over time at Silver Glen Springs. Of the early Middle Archaic deposits, Feature 205 contains rodents, rabbits, and a single deer while Feature 201 contains both rodents and rabbits. The Mt. Taylor deposits show a slight increase in the predominance of deer.

While Feature 200 contains a single deer and no other identified mammals, Blessing identified a significant contribution of large mammals in her sample, with a small contribution of rodents. Stanton identified a focus on both deer and rabbit, with a small contribution of rodents and medium-sized mammals such as opossums and raccoon.

Table 8-3. Sum of Class NISP for Features 205, 201, 200, and 8MR123 samples (condensed from Blessing 2011 and Stanton 1995)

Time Period	**Early Middle Archaic**				**Mt. Taylor**					
Feature	**Feature 205 (8540–8380 cal BP)**		**Feature 201 (8020–7870 cal BP)**		**Feature 200 (7170–6970 cal BP)**		**8MR123 (6780–4620 cal BP) (Blessing 2011)**		**8MR123 (5620–4320 cal BP) (Stanton 1995)**	
Class	**NISP**	**% NISP**	**NISP**	**% NISP**	**NISP**	**% NISP**	**NISP**	**% NISP**	**NISP**	**% NISP**
Actinopterygii	1983	74.9%	869	79.7%	795	77.3%	2265	88.9%	2366	79.2%
Amphibia	37	1.4%	3	0.3%	3	0.3%	3	0.1%	6	0.2%
Aves	58	2.2%	4	0.4%	0	0.0%	5	0.2%	18	0.6%
Mammalia	96	3.6%	75	6.9%	82	8.0%	60	2.4%	85	2.8%
Reptilia	472	17.8%	139	12.8%	148	14.4%	215	8.4%	511	17.1%
Grand Total	**2646**	**100.0%**	**1090**	**100.0%**	**1028**	**100.0%**	**2548**	**100.0%**	**2986**	**100.0%**

Reptiles throughout all the deposits comprised of snakes and aquatic turtles. Soft-shelled turtles were found in all the deposits analyzed by myself, Blessing, and Stanton. There appears to have been a heavy focus on mud or musk turtles during the early Middle Archaic, and this pattern remains consistent in the Feature 200 deposit. In addition to mud/musk turtles, Blessing further identified pond turtles in her analyzed deposit and Stanton identified terrestrial turtles such as gopher tortoise (*Gopherus poluphemus*) and common box turtle (*Terrapene carolina*). Alligators were absent in all the deposits. Within the three deposits analyzed for this thesis there appears to be a general reduction in the number of birds present in each sample over time. The greatest diversity of birds is found in Feature 205, the earliest of the analyzed deposits. Here, I have identified both terrestrial birds such as turkey, and waterfowl such as common gallinule, American coot, and duck. In contrast, I only identified ducks in Feature 201. Of the Mt. Taylor deposits, while I identified no birds in the Feature 200 sample, Blessing identified individuals from the swan, duck, and goose family (*Anatidae*) and

Stanton recorded several unidentified birds. Finally, amphibians throughout all the samples comprised sirens and frogs.

Conclusion

Overall, there appears to have been a general level of consistency in the subsistence patterns of the Silver Glen Springs inhabitants between the early Middle Archaic and Mt. Taylor periods. Based on the available data, there appears to have been a slight trend towards a focus on mammals and reptiles over time, particularly larger mammals and more terrestrial reptiles (Figure 8-1). In addition, shellcracker (*Lepomis microlophus*) and other species of bream appear to be increasingly targeted over time.

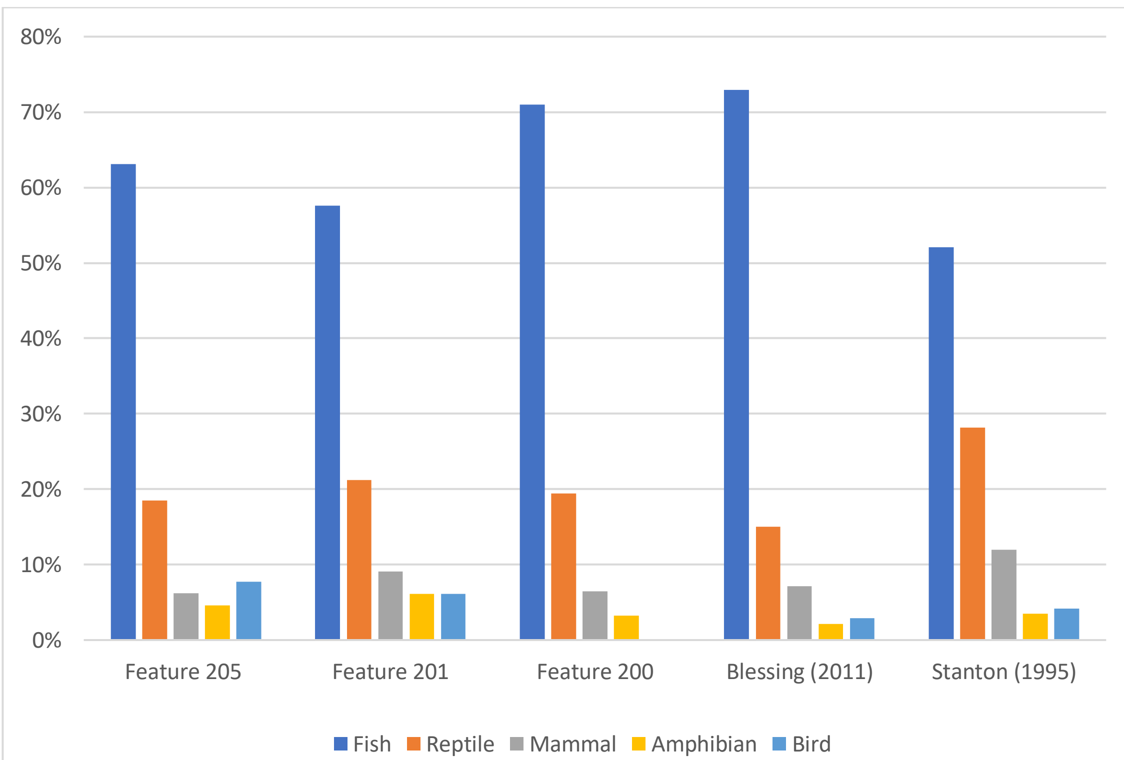

Figure 8-1. Comparison of Class MNI Proportions between all the Silver Glen Springs Deposits Analyzed in this Thesis.

Richness, Diversity and Equitability

Comparing multiple samples, particularly when those samples are of varied sizes, is generally very difficult. In this section, I present the results of my diversity, richness, and equitability calculations. Diversity, richness, and equitability formulas allow researchers to compare very different samples and allow for interpretations regarding how people exploit their environments. I present here the results of calculations I've done for the three pit samples analyzed for this thesis and data from both Windover and 8MR123, a separate Silver Glen Springs shell mound to 8LA1-West.

I used two mathematical formulas to determine the diversity and one formula to determine equitability within Features 205, 201, 200, the Nabergall-Luis (1990) Windover sample, and the Stanton (1995) and Blessing (2011) 8MR123 samples. All my calculations were processed using the 'vegan' library within the program R. In this section, I first explain how I determined richness values for each sample before describing the Shannon Diversity Index (H) and Simpson Diversity Index (D), which calculate diversity within a given sample, and Shannon's Equitability (E), which calculates evenness (the relative abundance of species) within a sample. I also describe the rarefaction analysis I performed on all the data. All these calculations were based on the mathematical formulas shown here, where n represents the MNI for a given species and N represents the total MNI of all species.

Taxonomic Richness is calculated by counting the total number of represented taxa. Richness values are directly connected to both the size of the sample and the number of identifications the analyst could make (Grayson 1984). As a result, comparison of richness values between proveniences or sites is difficult. I obtained richness values by counting the number of taxa for each feature which had an MNI count of at least 1. A few issues may exist for this method. Specifically, Nabergall-Luis (1990), Stanton (1995), and Blessing (2011) have all used different conventions for creating their taxonomic groupings. Stanton (1995), for instance, did not identify any specific species of bird but instead separated all the identified birds in his sample into size categories. As a result, where Blessing (2011) and I have a single category for Aves, Stanton (1995) has three. I did not attempt to correct for any errors this may have caused prior to running my statistics analyses. Taxonomic richness, that is, the total number of species in a community, is designated here as 'S.'

The Shannon-Wiener Diversity Index (H) is one mathematical method to characterize species diversity within a given community. It considers both species richness and evenness. The 'vegan' library provide the formula for the Shannon-Wiener Diversity index as follows:

$$H' = -\sum_{i} p_i \log_b p_i$$

Where p_i is the proportion of individuals in the sample that falls within taxon *i* and *b* is the base of the logarithm. p_i is calculated using MNI counts as a measure of abundance, so it can alternatively be written as $\frac{n_j}{N}$, where n_i is the number of individuals in each taxon, and *N* is the total number of all individuals in a sample. By rewriting the Shannon Diversity Index as such, the calculation can be alternatively expressed as:

$$H = -\sum_{j=1}^{S} \left(\frac{n_i}{N} * \ln\left(\frac{n_i}{N}\right)\right)$$

An alternative formula for calculating diversity is the Simpson Diversity Index (*D*). Simpson Diversity Index gives the probability of any two individuals being selected at random from within a given community. The 'vegan' library provides a formula for Simpson's Index as follows, where p_i is the proportion of a given species in a population:

$$D = \sum pi^2$$

The Simpson Diversity Index is usually expressed as $1 - D$ so that larger values are associated with greater evenness (Faith and Du 2017). To produce an unbiased estimate of diversity, the Simpson Diversity Index can also be expressed as follows, where n_i is the number of individuals in each taxon, and *N* is the total number of all individuals in a sample:

$$D = 1 - \sum \left(\frac{n_i(n_i - 1)}{N(N - 1)}\right)$$

Shannon's Equitability (E_H) normalizes the Shannon Diversity Index to a value between 0 and 1 to present the relative evenness of the species within a sample. An index value of 1 indicates that all the species within the sample are even, or have the same frequency, while value closer to 0 indicates that the sample is biased towards certain species. The formula for Shannon's Equitability as provided by the 'vegan' library is as follows, where *H* is the Shannon-Wiener index result for the given sample and *S* is the number of observed taxa:

$$E_H = \frac{H}{\ln(S)}$$

Rarefaction analyses consider the differences in sample sizes, understanding that there tends to be more species types in larger sample sizes. To correct for this, a rarefaction analysis identifies the smallest sample amongst a group of compared datasets and creates a random subsample of the same size from each compared dataset. Amongst the datasets I analyzed, Feature 200 had the smallest sample size with a sample MNI of 31. As such the results of the rarefaction analysis, presented in the last row of Table 8-4, show the expected species richness for a random subsample of 31 from each analyzed sample.

The results of all these analyses are provided in Table 8-4, which shows the species richness, Shannon Diversity Index values, Simpson Diversity Index values, Shannon Equitability values, and rarefaction results for each of the analyzed features. I believe that, due to the small sample sizes amongst all the analyzed datasets, significance tests are unlikely to provide evidence of differences between the samples. Instead, I will discuss why any differences between the samples in the analyses may exist.

Proportionally, Feature 201 has the highest taxonomic richness when sample size is considered. These results are more evident when the data is rarefied, as Feature 201 has the highest rarefied species richness values of all the analyzed samples. A high Shannon Diversity Index value (H) indicates that taxonomic richness and evenness in Feature 201 are higher than some of the other analyzed samples. That is, the total number of species is higher than in the other samples and the sample is more evenly distributed between species. High Shannon Equitability values (E_H) in Feature 201 also indicate that the sample is evenly distributed between the species present.

Table 8-4. Richness, Diversity, and Equitability values for Features 205, 201, 200, Blessing (2011), Stanton (1995) and Windover Column Samples (Nabergall-Luis 1990)

<table>
<tr><th>Time Period</th><th colspan="3">Early Middle Archaic</th><th colspan="4">Mt. Taylor</th></tr>
<tr><th>Feature</th><th>Feature 205 (8540-8380 cal BP)</th><th>Feature 201 (8020-7870 cal BP)</th><th>Windover Column Samples (8000-7300 cal BP)</th><th>Feature 200 (7170-6970 cal BP)</th><th>8MR123 (6780-5700 cal BP) (Blessing 2011)</th><th>8MR123 (5700-4620 cal BP) (Blessing 2011)</th><th>8MR123 (5620-4320 cal BP) (Stanton 1995)</th></tr>
<tr><td>Sample MNI</td><td>65</td><td>33</td><td>306</td><td>31</td><td colspan="2">140</td><td>144</td></tr>
<tr><td>Species Richness (S)</td><td>30</td><td>22</td><td>31</td><td>17</td><td colspan="2">36</td><td>33</td></tr>
<tr><td>Shannon Diversity Index (H)</td><td>2.927</td><td>2.901</td><td>2.853</td><td>2.423</td><td>2.46</td><td>3.16</td><td>3.077</td></tr>
<tr><td>Simpson Diversity Index (D)</td><td>0.912</td><td>0.931</td><td>0.920</td><td>0.857</td><td colspan="2">0.947</td><td>0.931</td></tr>
<tr><td>Shannon Equitability (E_H)</td><td>0.860</td><td>0.938</td><td>0.831</td><td>0.855</td><td colspan="2">0.894</td><td>0.880</td></tr>
<tr><td>Rarefied Species Richness</td><td>17.804</td><td>20.966</td><td>14.481</td><td>17</td><td colspan="2">17.855</td><td>17.313</td></tr>
</table>

The Windover sample has the lowest Shannon Equitability E_H values, indicating that the sample is more biased towards certain species. It also has the lowest rarefied species richness values of all the analyzed samples, meaning that most of the sample was biased towards a smaller number of species types. Nabergall-Luis' (1990) data highlights that the sample is significantly biased towards particular species of fish such as catfish and bream. The high MNI of smaller aquatic species such as Molly and Killifishes is likely due in part to Nabergall-Luis' (1995) choice to screen through 1/16" mesh. The 1/16" mesh likely allowed for Nabergall-Luis to catch significantly more representative elements of these smaller fish than the other analysts and myself, proportionally increasing the total number of identified species for these taxa.

Apart from the samples mentioned, the results from each of the pit deposits appear to be remarkably similar. This indicates to me that despite the temporal or geographical distances between my samples, statistical analyses do not indicate that there were substantial differences between them regarding species richness and evenness.

Conclusions

The results of my secondary analyses indicate that there was a generalized subsistence strategy in use during the Archaic period, where resources were obtained in relatively direct proportion to the natural abundance of resources in the environment. They also highlight a general pattern of similarity between the early Middle Archaic and Mt. Taylor periods. Specifically, my results suggest that (a) the environment was similar, (b) the species targeted were similar, (c) people were likely processing faunal subsistence in similar ways. This is not entirely unexpected based on the results of the environmental analysis, which highlights the similarities in environment at Silver Glen Springs between 8500–6900 cal BP. My results here suggest that there was not a dramatic change in subsistence and depositional patterns at Locus A between the early Middle Archaic and the Mt. Taylor period pit deposits.

CHAPTER 9

CONCLUSIONS: PLACEMAKING IN THE EARLY MIDDLE ARCHAIC AND MT. TAYLOR PERIODS

The faunal remains within the three pit deposits analyzed for this thesis provide data for two areas of investigation. First, they provided data on the environmental conditions present at Silver Glen Springs at the start of the Middle Holocene, between approximately 8500–7000 cal BP. Secondly, they indicate the type of subsistence economy in use at Silver Glen Springs during the same period as well as the types of social processes in effect at the site. In this section, I will briefly summarize my conclusions for both these areas of investigation.

One of the starker results of this thesis is the similarities between the modern day environmental conditions at Silver Glen Springs, outlined in Chapter 4, and the results of my Middle Holocene species habitat analysis in Chapter 8. These similarities further support the conclusions of O'Donoghue (2015) in that wetter, more modern-like environments were in place at least as early as 8500 cal BP. Similarities in the species diversity between the early Middle Archaic deposits at Silver Glen Springs and Windover (Nabergall-Luis 1990) and the Mt. Taylor deposits at Silver Glen Springs (Blessing 2011 and Stanton 1995) indicate that riverine environments capable of supporting diverse faunal and floral communities continued throughout both periods (Chapter 8). The similarities between Windover and Silver Glen Springs, despite the distance between the two sites, also indicates that these environmental conditions may have existed throughout northeastern Florida. These riverine communities hosted bountiful faunal species like fish, including large-mouth bass, shellcracker, gar, and bowfin, reptiles such as turtles and snakes, amphibians and waterfowl. In my habitat analysis in Chapter 8, I conclude that the presence of such species allows me to make the further inference that Silver Glen Springs had abundant vegetation, both emergent and submergent, and prey species such as insects and invertebrates in quantities large enough to support a diverse faunal community. While shellcracker is present in all the analyzed deposits, of note is the relatively abundant quantities of shellcracker in the oldest of the features, Feature 205. This species feeds almost exclusively on freshwater invertebrates, and its presence in this deposit indicates that the environment around Silver Glen Springs could support at least a moderate community of gastropods or bivalves as early as 8500 cal BP, at least one thousand years before the beginning of shell mound construction at the site.

As such, the results of my faunal analysis indicate that there was at least a degree of continuity in environmental conditions between the early Middle Archaic and Mt. Taylor Periods. I believe, based on this data, that it is likely that environmental conditions were not solely responsible for the beginning of shell mound construction within the St. Johns River region. Instead, it is likely that certain social conditions, perhaps influenced by the environment, played a strong role in the beginning of shell mound construction.

My argument in this thesis is that the evidence available to me, both in this thesis and through other faunal research at Silver Glen Springs, indicates that there were several lines of continuity between the early Middle Archaic and Mt. Taylor periods. This suggests that the beginning of shell mound construction was not indicative of a "rupture" between the practices of the two periods. I argue instead that shell mound construction was an alternative form of established placemaking activities that had preceded the Mt. Taylor period by approximately a thousand years.

In support of this argument are several lines of evidence. First, there is remarkable similarity between the subsistence economies of the early Middle Archaic and Mt. Taylor deposits at Silver Glen Springs. While the analyzed datasets are small, by comparing two Silver Glen Springs deposits from the early Middle Archaic and three Silver Glen Springs deposits from the Mt. Taylor period (using Blessing's 2011 and Stanton's 1995 data), I've tracked a trend of similarity between faunal assemblages at the site over the course of nearly four thousand years. The data in this thesis shows that while there was a slight increase in the proportion of shellcracker during the Mt. Taylor period, perhaps indicative of an increased presence of shellfish within the environment, the Silver Glen Springs populations continued to maintain a riverine subsistence economy primarily focused on bony fish and supplemented primarily by reptiles (Chapter 8).

Secondly, despite being deposited over the course of a thousand years, the pit deposits I have analyzed for this thesis show remarkable similarity in the proportion of species within each deposit. This pattern is similar in the overall counts for each deposit and in the proportion of species showing evidence of weathering or burning (Chapter 7). In addition, the form of the pits themselves does not appear to change, although there does appear to be at least one obvious functional difference in Feature 200 (which dates to the Mt. Taylor period) in that a fire appears to have been created at the base of the pit before infilling. Feature 200 is also the only feature to contain obvious evidence of discard from tool manufacture. All the pits, however, appear to have been quickly filled, as evidenced by the remarkably good preservation despite elevated levels of pre- or peri-depositional fragmentation. The similarities present between them does suggest that the inhabitants of Silver Glen Springs continually reoccupied the space at Locus A and repetitively used the same types of depositional patterns between 8500–7000 cal BP. This interpretation is further supported by the conclusions drawn by Randall (2017) that the dark, organic layer in which Features 205, 201, and 200 were identified is the remains of a multitude of pits. Based on the results of this thesis and Randall's interpretations, it is highly likely that additional pits could be further isolated beneath Locus A.

The results of my faunal analysis of these three Silver Glen Springs pit deposits also correlate with the types of placemaking activities that may have been in effect at Windover. That is, specific types of depositional activities were repeatedly conducted in ways that suggest that long-term social memories or histories were being perpetuated by Archaic populations.

Other data from Locus A further resolves the perceived "rupture" between the early Middle Archaic and Mt. Taylor periods and supports an interpretation of the continued existence of similar placemaking activities between the two periods. Much like other St. Johns River Sites discussed in Chapter 2, the Locus A shell mound was one of the earliest shell mounds at Silver Glen Springs and was constructed directly above the dark, pit-filled layer at Locus A, generally conforming in shape to the currently known boundaries of the pit-filled layer (Randall and Sassaman 2017). Much like at Windover, the ways in which the pits (or in the case of Windover, submerged burials) were located is unclear. However, the similarity in placement between the extent of the early Middle Archaic and early Mt. Taylor pits and the subsequent mound indicates that the Locus A mound was constructed with the knowledge of where the pit deposits were located.

I argue that rather than a new incoming population with different social and subsistence practices, the evidence in this thesis suggests that there was continuity between the type of repetitive placemaking activities and subsistence economies between the shell mound and pit deposits at Silver Glen Springs site. This continuity, I argue, is indicative of a gradual change in practices which referenced earlier practices, and which are indicative of the presence of long-term group histories that bridge both the early Middle Archaic and Mt. Taylor periods.

In sum, the results of my thesis add to a growing body of research regarding the impetus behind shell mound construction during the Mt. Taylor period, and add strength to arguments that suggest a possible social mechanism behind the change, rather than an entirely environmental mechanism. My results also highlight how archaeologists should search in areas beneath or surrounding shell mounds for evidence from the early Middle Archaic period. By doing so, the sparse archaeological record from this period will hopefully grow considerably and provide additional evidence about Archaic ways of life. Finally, my thesis provides evidence which further supports the existence of wetter environments around 8500 cal BP and the establishment of riverine subsistence economies by Archaic "hunter-fisher-gatherer" populations.

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APPENDICES

Appendix 1. Modern Fish Species Identified at Silver Glen Springs (compiled from Harris et al. 2017)

Anadromous (Migrates from sea to rivers to spawn)	
Morone saxatilis	Striped Bass
Dasyatis sabina	Atlantic Stingray
Catadromous (Migrates from rivers to the sea to spawn)	
Anguilla rostrata	American Eel
Freshwater	
Amia calva	Bowfin
Caranx hippos	Crevalle Jack
Elassoma okefenokee	Okefenokee pygmy sunfish
Elops saurus	Ladyfish
Erimyzon sucetta	Lake Chubsucker
Fundulus chrysotus	Golden Topminnow
Fundulus seminolis	Seminole Killifish
Gobiosoma bosc	Code Goby
Heterandria formosa	Least Killifish
Lepisosteus osseus	Longnose Gar
Lepisosteus platyrhincus	Florida Gar
Lepomis auritus	Redbreast Sunfish
Lepomis gulosus	Warmouth
Lepomis macrochirus	Bluegill
Lepomis microlophus	Redear Sunfish
Lepomis punctatus	Spotted Sunfish
Lucania goodei	Bluefin Killifish
Lucania parva	Rainwater Killifish
Lutjanus griseus	Grey Snapper
Menifia beryllina	Inland Silverside

Micropterus salmoides	Largemouth Bass
Mugil cephalus	Striped Mullet
Notemigonus crysoleucas	Golden Shiner
Notropis cummingsae	Dusky Shiner
Notropis harperi	Redeye Chub
Notropis petersoni	Coastal Shiner
Oreochromis aureus	Blue Tilapia
Poecilia latipinna	Sailfin Molly
Strongylura marina	Atlantic Needlefish
Syngnathus scovelli	Gulf Pipefish

Appendix 2. Modern Non-Fish Species Identified at Silver Glen Springs (compiled from Wetland Solutions 2010)

Avian Species	
Anhinga anhinga	Anhinga
Ardea herodias	Great Blue Heron
Buteo lineatus	Red-shouldered Hawk
Butorides virescens	Green Heron
Cardinalis cardinalis	Northern Cardinal
Cathartes aura	Turkey Vulture
Coragyps atratus	American Black Vulture
Corvus ossifragus	Fish Crow
Dendroica coronata	Yellow-rumped Warbler
Dryocopus pileatus	Pileated Woodpecker
Dumetella carolinensis	Gray Catbird
Eudocimus albus	American White Ibis
Haliaeetus leucocephalus	Bald Eagle
Larus delawarensis	Ring-billed Gull
Megaceryle alcyon	Belted Kingfisher
Melanerpes carolinus	Red-bellied Woodpecker
Meleagris gallopavo	Wild Turkey
Pandion haliaetus	Osprey
Phalacrocorax auritus	Double-crested Cormorant
Picoides pubescens	Downy Woodpecker
Podilymbus podiceps	Pied-billed Grebe
Sayornis phoebe	Eastern Phoebe (migratory)
Tachycineta bicolor	Tree Swallow (migratory)
Amphibian Species	
Hyla cinerea	Green Tree Frog
Lithobates catesbeianus	Catesbeiana Bullfrog

Rana grylio	Grylio Pig Frog
Crustaceans	
Procambarus sp.	Crayfish
Procambarus spiculifer	White Tubercled Crayfish
Mammal	
Lontra canadensis	North American River Otter
Odocoileus virginianus	White-tailed Deer
Procyon lotor	Raccoon
Sciurus carolinensis	Eastern Gray Squirrel
Trichechus manatus latirostrus	Florida Manatee
Reptile	
Alligator mississippiensis	American Alligator
Anolis carolinensis	Carolina Anole
Apalone ferox	Florida Softshell
Caretta caretta	Loggerhead Sea Turtle
Chelydra serpentina	Snapping Turtle
Elaphe obsoleta spiloides	Gray Rat Snake
Eumeces fasciatus	Five-lined Skink
Eumeces inexpectatus	Southeastern Five-lined Skink
Graptemys barbouri	Barbour's Map Turtle
Nerodia erythrogaster erythrogaster	Red-bellied Water Snake
Nerodia fasciata pictiventris	Florida Banded Water Snake
Nerodia taxispilota	Brown Water Snake
Pseudemys concinna suwanniensis	Suwannee Cooter
Pseudemys floridana floridana	Florida Cooter
Pseudemys nelsoni	Florida Red-bellied Turtle
Sternotherus minor minor	Loggerhead Musk Turtle
Sternotherus odoratus	Common Musk Turtle
Trachemys scripta	Yellow-bellied Slider

Appendix 3. Windover Column Sample Results, 8000-7300 years BP (condensed from Nabergall-Luis 1990)

Windover MNI by Column Sample		MNI	
Scientific Name	Common Name	n	%
Osteichthyes	Fish	0	0.0%
Centrarchidae	Sunfish and bass	21	6.9%
Micropterus salmoides	Largemouth bass	3	1.0%
Lepomis spp.	Sunfish	40	13.1%
cf. Lepomis gulosus	Warmouth	0	0.0%
cf. Lepomis macrochirus	Bluegill	0	0.0%
Atheriniformes	Silversides	1	0.3%
Poeciliidae	Livebearers	0	0.0%
cf. Poecilia spp.	Molly	30	9.8%
Cyprinodontidae	Killifishes	37	12.1%
Jordanella floridae	Florida flagfish	11	3.6%
Fundulus spp.	Topminnow	15	4.9%
Ictalurus spp.	Catfish	46	15.0%
Cypriniformes	Minnow	4	1.3%
Catostomidae	Suckers	1	0.3%
cf. Erimyzon sucetta	Lake chubsucker	0	0.0%
Notemigonus crysoleucas	Golden shiner	10	3.3%
Esox niger	Chain pickerel	9	2.9%
Amia Calva	Bowfin	11	3.6%
Lepisosteus spp.	Florida gar	5	1.6%
Aves	Birds	2	0.7%
Anatidae	Swans, geese, duck	2	0.7%
Amphibia	Amphibian	0	0.0%
Sirenidae	Sirens	0	0.0%
Siren lacertina	Greater siren	10	3.3%
Anura	Frog	0	0.0%
Ranidae	True frogs	5	1.6%

Rana spp.	Bull, pig, green, southern leopard frogs	2	0.7%
Reptilia	Turtles, lizards, snakes, alligator	1	0.3%
Serpentes	Snake	0	0.0%
Colubridae	Non-poisonous snake	11	3.6%
Testudines	Turtle	1	0.3%
Kinosternidae	Mud and musk turtle	0	0.0%
Kinosternon spp.	Mud turtle	9	2.9%
Sternotherus spp.	Musk turtle	4	1.3%
Anolis carolinensis	Green anole	4	1.3%
Alligator mississippiensis	American alligator	3	1.0%
Mammal	Mammal	3	1.0%
Rodentia	Rodentia	2	0.7%
Cricetidae	New World rats and mice	2	0.7%
Sigmodon hispidus	Cotton Rat	1	0.3%
Total:		306	100.0%

Appendix 4. 8MR123 Column Sample Results, 5620-4320 cal BP (condensed from Stanton 1995)

8MR123 Test Unit 1 (Stanton 1995)					
Scientific Name	Common Name	NISP		MNI	
		n	%	n	%
Mammal Lg.	Large Mammal	21	0.5%	0	0.0%
Mammal Sm.	Small Mammal	12	0.3%	1	0.7%
Mammal	Mammal	2	0.0%	0	0.0%
Sylvilagus sp.	Rabbit	6	0.1%	4	2.8%
Rodentia	Rodent	11	0.2%	2	1.4%
Didelphis virginiana	Virginia Oppossum	1	0.0%	1	0.7%
Sigmodon hipsidus	Hipsid Cotton Rat	2	0.0%	1	0.7%
Sciurus carolinensis	Eastern Gray Squirrel	2	0.0%	2	1.4%
Odocoileus virginianus	White-tailed Deer	25	0.6%	5	3.5%
Procyon lotor	Raccoon	3	0.1%	1	0.7%
Canis sp.	Wolves, Dogs, Coyotes	0	0.0%	0	0.0%
Aves Lg.	Large Bird	6	0.1%	2	1.4%
Aves Med.	Medium Bird	2	0.0%	1	0.7%
Aves Sm.	Small Bird	8	0.2%	3	2.1%
Aves	Bird	2	0.0%	2	1.4%
Testudines	Turtle	228	5.1%	0	0.0%
Kinosternidae	Mud and Musk Turtle	101	2.2%	6	4.2%
Chelydra serpentina	Common Snapping Turtle	9	0.2%	2	1.4%
Terrapene carolina	Common Box Turtle	29	0.6%	5	3.5%
Gopherus polyphemus	Gopher Tortoise	1	0.0%	1	0.7%
Trionyx ferox	Soft-shelled Turtle	19	0.4%	3	2.1%
Trachemys	Sliders	32	0.7%	13	9.0%
Serpentes	Snake	61	1.4%	1	0.7%
Colubridae	Non-poisonous Snake	8	0.2%	4	2.8%
Natrix Sp.	Water Snake	18	0.4%	3	2.1%
Viperidae	Pit Viper	5	0.1%	2	1.4%
Siren lacertina	Greater Siren	4	0.1%	3	2.1%
Anura	Frog	2	0.0%	2	1.4%
Osteichthyes	Bony Fish	1712	38.1%	0	0.0%
Lepisosteus sp.	Gar	171	3.8%	7	4.9%
Amia Calva	Bowfin	35	0.8%	5	3.5%
Ictalarus sp.	Catfish	74	1.6%	10	6.9%
Centrarchidae	Sunfish	27	0.6%	0	0.0%
Lepomis sp.	Bream	27	0.6%	0	0.0%
Lepomis microlophus	Redear Sunfish	218	4.8%	27	18.8%
Micropterous sp.	Black Bass	28	0.6%	5	3.5%

Micropterous salmoides	Largemouth Bass	37	0.8%	10	6.9%
Mugil sp.	Mullet	28	0.6%	5	3.5%
Mugil cephalus	Flathead Grey Mullet	1	0.0%	1	0.7%
Esox sp.	Pickeral	8	0.2%	4	2.8%
Carcharhinidae	Shark	0	0.0%	0	0.0%
UID Vertebrata	Unidentified Vertebrate	1511	33.6%	0	0.0%
Total		4497	100.0%	144	100.0%

Appendix 5. 8MR123 Results, 6780-4620 cal BP (Blessing 2011)

8MR123 Test Unit 2, Feature 1 (Blessing 2011)					
		Number of Individual Specimens (NISP)		Minimum Number of Individuals (MNI)	
Scientific Name	Common Name	n	%	n	%
Vertebrata	UID Vertebrate	2148	45.7%	0	0.0%
Dasyatis sabina	Atlantic Stingray	1	0.0%	1	0.7%
Pogonias chromis	Black Drum	1	0.0%	1	0.7%
Scianops ocellatus	Red Drum	3	0.1%	1	0.7%
Actinopterygii	Ray-Finned Fish	1754	37.4%	0	0.0%
Lepisosteus sp.	Gar	12	0.3%	7	5.0%
Amia Calva	Bowfin	118	2.5%	13	9.2%
Anguilla Rostrata	American Eel	12	0.3%	4	2.8%
Clupeidae	Shad/Herring	2	0.0%	2	1.4%
Esox sp.	Pickerel	9	0.2%	5	3.5%
Cypriniformes	Minnow	4	0.1%	0	0.0%
Notemigonus crysoleucas	Golden Shiner	16	0.3%	9	6.4%
Erimyzon sucetta	Lake Chubsucker	25	0.5%	10	7.1%
Ictaluridae	Catfish	9	0.2%	7	5.0%
Ameirurus sp.	Bullhead	5	0.1%	4	2.8%
Fundulidae	Topminnow	1	0.0%	1	0.7%
Centrarchidae	Sunfish	192	4.1%	4	2.8%
Micropterus salmoides	Large-mouth Bass	9	0.2%	5	3.5%
Lepomis sp.	Bream	30	0.6%	12	8.5%
Lepomis microlophus	Shellcracker	58	1.2%	13	9.2%
Mugil spp.	Mullet	4	0.1%	3	2.1%
Caudata	Salamander	2	0.0%	2	1.4%
Anura	Frog	1	0.0%	1	0.7%
Reptilia	Reptile	3	0.1%	1	0.7%
Testudines	Turtle	168	3.6%	10	7.1%
Kinosternidae	Mud/Musk Turtle	3	0.1%	1	0.7%
Kinosternon sp.	Mud Turtle	1	0.0%	1	0.7%
Sternotherus sp.	Musk Turtle	1	0.0%	1	0.7%
Emydidae	Pond Turtle	11	0.2%	1	0.7%
Apalone ferox	Soft-Shelled Turtle	2	0.0%	2	1.4%
Serpentes	Snake	25	0.5%	4	2.8%
Colubridae	Colubrid Snake	1	0.0%	1	0.7%
Aves	Bird	2	0.0%	2	1.4%

Anatidae	Swan, Duck, Geese	3	0.1%	2	1.4%
Mammalia	Mammal	28	0.6%	0	0.0%
Mammalia (Sm. - Med.)	Sm.-Med. Mammal	1	0.0%	1	0.7%
Mammalia (Med.-Lg.)	Med.-Lg. Mammal	5	0.1%	3	2.1%
Mammalia (Large)	Large Mammal	24	0.5%	4	2.8%
Rodentia	Rodent	1	0.0%	1	0.7%
Sigmodon hipsidus	Hipsid Rat	1	0.0%	1	0.7%
Total		4696	100.0%	141	100.0%

Appendix 6. Faunal Data from 8LA1-West Locus A from Features 205, 201, 200, and Slot Trench 2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
2.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	3	0.3
5.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Quadrate	Anterior end	Unsided	No	No	No	2	<0.1
6.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Premaxilla	Anterior end	Unsided	No	No	No	1	<0.1
7.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Dentary	Anterior end	Left	No	No	No	1	<0.1
11.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	Anterior end	N/A	No	No	No	20	0.8
12.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	325	11.2
13.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	40	1.3
51.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	4	0.3
53.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Quadrate	Anterior end	Unsided	No	Yes	No	1	<0.1
57.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	44	1.6
58.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	9	0.3
70.2	5054	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Dentary	Anterior end	Right	No	No	No	1	0.3
162.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	N/A	N/A	Yes	No	No	1	<0.1
208.2	5054	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	15	0.4
19.2	5054	205	West 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	4	<0.1
20.2	5054	205	West 1/2	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	4	0.4
55.2	5054	205	West 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	Yes	No	1	<0.1
163.2	5054	205	West 1/2	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	No	No	No	1	<0.1
26.2	5054	205	West 1/2	1/8"	Anguilla rostrata	American Eel	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
231.2	5054	205	West 1/2	1/8"	Anguilla rostrata	American Eel	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
27.2	5054	205	West 1/2	1/8"	Anura	Frog	Ischium	N/A	N/A	Yes	No	No	2	<0.1
28.2	5054	205	West 1/2	1/8"	Anura	Frog	Tibiofibula	Shaft	Unsided	No	No	No	1	<0.1
29.2	5054	205	West 1/2	1/8"	Anura	Frog	Tibiofibula	Shaft	Left	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
30.2	5054	205	West 1/2	1/8"	Anura	Frog	Tibiofibula	Shaft	Right	No	No	No	1	<0.1
31.2	5054	205	West 1/2	1/8"	Anura	Frog	Vertebrae	N/A	N/A	Yes	No	No	5	0.2
32.2	5054	205	West 1/2	1/8"	Anura	Frog	Scapula	N/A	Right	Yes	No	No	1	<0.1
33.2	5054	205	West 1/2	1/8"	Anura	Frog	Scapula	N/A	Left	Yes	No	No	1	<0.1
34.2	5054	205	West 1/2	1/8"	Anura	Frog	Urostyle	Anterior end	N/A	No	No	No	1	<0.1
167.2	5054	205	West 1/2	1/4"	Anura	Frog	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
49.2	5054	205	West 1/2	1/8"	Arvicolinae	Vole, Lemming, and Muskrat	Molar	N/A	Unsided	Yes	No	No	1	<0.1
39.2	5054	205	West 1/2	1/8"	Aves	Bird	Humerus	Distal end	Right	No	No	No	1	<0.1
41.2	5054	205	West 1/2	1/8"	Aves	Bird	Sternum	Anterior end	Unsided	No	No	No	1	<0.1
183.2	5054	205	West 1/2	1/4"	Aves	Bird	Furcula	Mid-section	Left	No	No	No	1	0.2
3.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Right	No	No	No	1	<0.1
4.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Left	No	No	No	3	0.2
22.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Articular	Posterior end	Left	No	No	No	1	<0.1
23.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Maxilla	Anterior end	Right	No	No	No	1	<0.1
52.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Right	No	Yes	No	1	<0.1
72.2	5054	205	West 1/2	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	5	0.8
229.2	5054	205	West 1/2	1/8"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	33	1.7
76.2	5054	205	West 1/2	1/4"	Chelydra serpentina	Snapping Turtle	Marginal 11	N/A	Left	No	No	No	1	3.2
182.2	5054	205	West 1/2	1/4"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	3	1
232.2	5054	205	West 1/2	1/8"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	13	0.4
233.2	5054	205	West 1/2	1/8"	Erimyzon sucetta	Lake Chubsucker	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
230.2	5054	205	West 1/2	1/8"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	No	2	<0.1
42.2	5054	205	West 1/2	1/8"	Fulica americana	American Coot	Scapula	Articular facet	Left	No	No	No	1	<0.1
21.2	5054	205	West 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Anterior end	Right	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
73.2	5054	205	West 1/2	1/4"	Ictaluridae	Catfish	Cleithrum	Mid-section	Left	No	No	No	1	0.6
35.2	5054	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	No	No	27	1.5
211.2	5054	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Neural	N/A	N/A	Yes	No	No	1	<0.1
212.2	5054	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plastron	N/A	N/A	Yes	No	No	3	<0.1
75.2	5054	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Plurals	N/A	N/A	Yes	No	No	2	0.3
180.2	5054	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 5	N/A	Right	Yes	No	No	1	<0.1
213.2	5054	205	West 1/2	1/8"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Right	Yes	No	No	1	<0.1
14.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	3	0.3
15.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Parasphenoid	Posterior end	N/A	No	No	No	2	0.2
16.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	2	<0.1
17.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	Yes	No	No	4	<0.1
18.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	No	No	8	0.4
59.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	Yes	No	4	0.2
60.2	5054	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	Yes	No	1	<0.1
227.2	5054	205	West 1/2	1/8"	Lepomis macrochirus	Bluegill	Basioccipital	N/A	N/A	Yes	No	No	1	<0.1
8.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	No	No	No	2	0.4
9.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	1	<0.1
10.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	No	No	16	0.8
56.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	Yes	No	4	0.3
71.2	5054	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	3	1.5
161.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	3	0.4
184.2	5054	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	No	No	No	1	0.6
204.2	5054	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	No	No	No	1	<0.1
54.2	5054	205	West 1/2	1/8"	Lepomis sp.	Bream	Vomer	Anterior end	N/A	No	Yes	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
206.2	5054	205	West 1/2	1/8"	Lepomis sp.	Bream	Dentary	Anterior end	Left	No	No	No	1	<0.1
226.2	5054	205	West 1/2	1/8"	Lepomis sp.	Bream	Parasphenoid	Mid-section	N/A	No	No	No	1	<0.1
48.2	5054	205	West 1/2	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Yes	2	0.5
81.2	5054	205	West 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Yes	1	3.7
43.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Ulna	Distal end	Unsided	No	No	No	1	<0.1
44.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Humerus	Proximal end	Right	No	No	No	1	<0.1
45.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Humerus	Proximal end	Left	No	No	No	1	<0.1
46.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Distal Femoral Epiphysis	N/A	Unsided	Yes	No	No	1	<0.1
65.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	Yes	No	2	<0.1
66.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Distal Phalanx	N/A	Unsided	Yes	Yes	No	1	<0.1
78.2	5054	205	West 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Tibia	Shaft	Unsided	No	No	No	1	0.6
165.2	5054	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	1	<0.1
24.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior end	Right	No	No	No	1	<0.1
25.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Quadrate	Anterior end	Left	No	No	No	1	<0.1
68.2	5054	205	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	1	0.2
69.2	5054	205	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	1	<0.1
159.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Right	No	No	No	1	2
160.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	1	0.3
185.2	5054	205	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	1	0.2
205.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
207.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	1	<0.1
209.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	1	<0.1
225.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Basioccipital	N/A	N/A	Yes	No	No	1	<0.1
228.2	5054	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Basioccipital	N/A	N/A	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
234.2	5054	205	West 1/2	1/8"	Mugil sp.	Mullet	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
82.2	5054	205	West 1/2	1/4"	Odocoileus virginianus	White-tailed Deer	Pelvis	Acetabulum	Right	No	No	No	1	66.8
83.2	5054	205	West 1/2	1/4"	Odocoileus virginianus	White-tailed Deer	Lumbar Vertebrae	Centrum	N/A	No	No	No	1	41.1
40.2	5054	205	West 1/2	1/8"	Rallidae	Crakes, Coots, and Gallinules	Coracoid	Anterior end	Right	No	No	No	1	<0.1
36.2	5054	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	13	1.9
37.2	5054	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Dorsal Spine	N/A	No	No	No	5	0.2
62.2	5054	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	Yes	No	7	0.5
63.2	5054	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	No	Yes	No	3	0.2
77.2	5054	205	West 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	7	1.7
74.2	5054	205	West 1/2	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
216.2	5054	205	West 1/2	1/8"	Siren sp.	Siren	Vertebrae	N/A	N/A	No	No	No	1	<0.1
181.2	5054	205	West 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 6	N/A	Left	No	No	No	1	<0.1
214.2	5054	205	West 1/2	1/8"	Sternotherus sp.	Musk Turtle	Marginal 9	N/A	Right	Yes	No	No	1	<0.1
215.2	5054	205	West 1/2	1/8"	Sternotherus sp.	Musk Turtle	Marginal 6	N/A	Left	Yes	No	No	1	<0.1
47.2	5054	205	West 1/2	1/8"	Sylvilagus sp.	Rabbit	Tooth	N/A	N/A	No	No	No	1	<0.1
79.2	5054	205	West 1/2	1/4"	Sylvilagus sp.	Rabbit	Pelvis	Unknown	Left	No	No	No	1	0.8
80.2	5054	205	West 1/2	1/4"	Sylvilagus sp.	Rabbit	Humerus	Proximal end	Left	No	No	No	1	1.2
61.2	5054	205	West 1/2	1/8"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	10	0.9
85.2	5054	205	West 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	3	0.6
210.2	5054	205	West 1/2	1/8"	Testudines	Turtle	Marginal	N/A	N/A	No	No	No	12	0.9
1.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	No	563	26.2
38.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	7	0.7
50.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	66	2.9
64.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
67.2	5054	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	No	25	5.1
84.2	5054	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	Yes	No	3	0.7
164.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	4	<0.1
166.2	5054	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	4	0.2
1.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	9	0.8
4.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Preoperculum	Midsection	Unsided	No	No	No	1	<0.1
5.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Maxilla	Anterior	Right	No	No	No	1	<0.1
6.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Premaxilla	Midsection	Left	No	No	No	1	<0.1
9.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	407	16.8
10.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	47	1.3
12.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	N/A	N/A	No	No	No	11	0.7
17.3	5023	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	2	0.6
52.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	4	0.3
58.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	50	1.8
59.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	9	0.6
61.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	N/A	N/A	No	Yes	No	2	<0.1
111.3	5023	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	1	0.6
112.3	5023	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Dentary	Midsection	Left	No	Yes	No	1	<0.1
114.3	5023	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	1	0.3
126.3	5023	205	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
135.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	14	<0.1
159.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Maxilla	N/A	Left	No	No	No	1	<0.1
174.3	5023	205	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	13	1.2
18.3	5023	205	West 1/2	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	7	0.3

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
19.3	5023	205	West 1/2	1/4"	Amia Calva	Bowfin	Basiooccipital	Posterior end	N/A	No	No	No	1	0.3
20.3	5023	205	West 1/2	1/4"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	No	No	No	2	0.3
127.3	5023	205	West 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	1	<0.1
23.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Femur	Shaft	Right	No	No	No	1	0.7
24.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Femur	Shaft	Left	No	No	No	1	0.7
25.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Tibiotarsus	Shaft	Right	No	No	No	1	0.7
26.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Coracoid	N/A	Right	Yes	No	No	1	1.4
27.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Coracoid	N/A	Left	Yes	No	No	1	1.4
28.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Ulna	Shaft	Right	No	No	No	1	1.9
29.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Ulna	N/A	Left	No	No	No	1	2.1
30.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Furcula	Distal end	Right	No	No	No	1	0.4
31.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Humerus	Shaft	Right	No	No	No	1	3.6
32.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Humerus	Shaft	Left	No	No	No	1	3.6
43.3	5023	205	West 1/2	1/4"	Anas sp.	Mallard, Teals, Pinwheels	Scapula	Articular facet	Right	No	No	No	1	0.4
36.3	5023	205	West 1/2	1/8"	Anatidae	Ducks, Geese, Swans	Tibiotarsus	Shaft	Left	No	No	No	1	0.4
21.3	5023	205	West 1/2	1/8"	Anatinae	Surface-feeding duck	Radius	Proximal	Right	No	No	No	1	<0.1
22.3	5023	205	West 1/2	1/8"	Anatinae	Surface-feeding duck	Coracoid	Anterior end	Right	No	No	No	1	0.3
33.3	5023	205	West 1/2	1/8"	Anura	Frog	Maxillary	Midsection	Unsided	No	No	No	1	<0.1
64.3	5023	205	West 1/2	1/8"	Anura	Frog	Maxillary	Midsection	Unsided	No	Yes	No	1	<0.1
66.3	5023	205	West 1/2	1/8"	Apalone ferox	Soft-Shelled Turtle	Carapace	N/A	N/A	No	Yes	No	1	<0.1
116.3	5023	205	West 1/2	1/4"	Apalone ferox	Soft-Shelled Turtle	Carapace	N/A	N/A	No	Yes	No	1	0.4
155.3	5023	205	West 1/2	1/4"	Apalone ferox	Soft-Shelled Turtle	Plastron	N/A	N/A	Yes	No	No	1	0.4
34.3	5023	205	West 1/2	1/8"	Aves	Bird	IUD Element	N/A	N/A	No	No	No	3	0.2
38.3	5023	205	West 1/2	1/8"	Aves	Bird	Furcula	Medial	N/A	No	No	No	1	0.5

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
39.3	5023	205	West 1/2	1/8"	Aves	Bird	Ulna	Distal end	Unsided	No	No	No	1	<0.1
40.3	5023	205	West 1/2	1/8"	Aves	Bird	Scapula	Shaft	Unsided	No	No	No	1	0.6
42.3	5023	205	West 1/2	1/4"	Aves	Bird	Tarsometatarsus	Shaft	Unsided	No	No	No	1	0.2
70.3	5023	205	West 1/2	1/8"	Aves	Bird	Coracoid	Anterior end; missing anterior-most tip	N/A	No	Yes	No	1	<0.1
128.3	5023	205	West 1/2	1/8"	Aves	Bird	UID Longbone	Shaft	N/A	No	No	No	9	0.8
129.3	5023	205	West 1/2	1/8"	Aves	Bird	UID Longbone	Shaft	N/A	No	No	No	4	0.6
130.3	5023	205	West 1/2	1/8"	Aves	Bird	Ribs	Shaft	N/A	No	No	No	4	0.4
2.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior	Right	No	No	No	5	<0.1
3.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior	Left	No	No	No	6	<0.1
16.3	5023	205	West 1/2	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	18	4.3
45.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Dentary	Anterior	Right	No	No	No	2	<0.1
46.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Dentary	Anterior	Left	No	No	No	2	0.1
53.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior	Right	No	Yes	No	1	<0.1
173.3	5023	205	West 1/2	1/8"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	5	0.4
134.3	5023	205	West 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	Centrum	N/A	No	Yes	No	3	<0.1
136.3	5023	205	West 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	7	0.6
139.3	5023	205	West 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
156.3	5023	205	West 1/2	1/4"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.5
144.3	5023	205	West 1/2	1/4"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	1	0.3
172.3	5023	205	West 1/2	1/8"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	12	0.6
171.3	5023	205	West 1/2	1/8"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	No	4	0.3
35.3	5023	205	West 1/2	1/8"	Fulica americana	American Coot	Carpometacarpus	Proximal end	Left	No	No	No	1	<0.1
169.3	5023	205	West 1/2	1/8"	Fulica americana	American Coot	Coracoid	Anterior end	Right	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
37.3	5023	205	West 1/2	1/8"	Gallinula chloropus	Common Moorhen	Coracoid	Anterior end	Right	No	No	No	1	<0.1
168.3	5023	205	West 1/2	1/8"	Gallinula chloropus	Common Moorhen	Coracoid	Anterior end	Left	No	No	No	1	<0.1
13.3	5023	205	West 1/2	1/4"	Ictaluridae	Catfish	Articular	Posterior end	N/A	No	No	No	1	0.6
47.3	5023	205	West 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Medial	Right	No	No	No	1	<0.1
48.3	5023	205	West 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Medial	Left	No	No	No	1	0.1
124.3	5023	205	West 1/2	1/4"	Ictaluridae	Catfish	Articular	Posterior end	Unsided	No	No	No	1	0.3
65.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	19	1.6
103.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	Unsided	No	No	No	40	2.3
106.3	5023	205	West 1/2	1/4"	Kinosternidae	Mud/Musk Turtle	Plural	N/A	N/A	Yes	No	No	6	8.7
145.3	5023	205	West 1/2	1/4"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	3	0.5
160.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plural	N/A	N/A	No	No	No	4	0.4
161.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	4	0.3
164.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plastron	N/A	N/A	No	Yes	No	3	0.2
165.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plural	N/A	N/A	No	Yes	No	1	<0.1
166.3	5023	205	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	Yes	No	1	<0.1
146.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Right	Yes	No	No	1	0.2
147.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 8	N/A	Left	Yes	No	No	1	0.3
148.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Left	Yes	No	No	1	0.2
149.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Right	Yes	No	No	1	8.7
150.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 2	N/A	Right	Yes	No	No	1	0.8
151.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 2	N/A	Left	Yes	No	No	1	0.3
152.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 3	N/A	Right	Yes	No	No	1	0.8
153.3	5023	205	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 5	N/A	Left	Yes	No	No	1	0.2
49.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	19	1.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
50.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	No	No	61	2.6
62.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	Yes	No	2	<0.1
63.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	Yes	No	6	0.3
73.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	6	0.3
74.3	5023	205	West 1/2	1/4"	Lepisosteus sp.	Gar	UID Element	Cranial	N/A	No	No	No	5	7.8
75.3	5023	205	West 1/2	1/4"	Lepisosteus sp.	Gar	Parasphenoid	Posterior end	N/A	No	No	No	1	0.6
76.3	5023	205	West 1/2	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	1	0.4
77.3	5023	205	West 1/2	1/4"	Lepisosteus sp.	Gar	Scales	N/A	N/A	Yes	No	No	1	<0.1
121.3	5023	205	West 1/2	1/4"	Lepisosteus sp.	Gar	UID Element	Cranial	N/A	No	No	No	5	7.7
131.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	Yes	No	No	26	1.3
132.3	5023	205	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	9	0.5
7.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Right	Yes	No	No	1	0.3
8.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	No	No	11	1.2
15.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	No	No	1	0.6
57.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	Unsided	No	Yes	No	1	<0.1
113.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	No	Yes	No	1	0.2
122.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Left	Yes	No	No	1	0.3
123.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	1	0.2
140.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	1	0.6
141.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Right	Yes	No	No	1	0.3
142.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Right	Yes	No	No	1	0.3
143.3	5023	205	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	3	2
157.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Lefr	Yes	No	No	1	0.3
158.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	1	0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
163.3	5023	205	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal	N/A	Right	Yes	Yes	No	1	<0.1
54.3	5023	205	West 1/2	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior	Right	No	Yes	No	1	<0.1
60.3	5023	205	West 1/2	1/8"	Lepomis sp.	Bream	Vomer	Anterior end	N/A	No	Yes	No	1	<0.1
78.3	5023	205	West 1/2	1/8"	Lepomis sp.	Bream	Premaxilla	Dorsal end	Right	No	No	No	1	<0.1
105.3	5023	205	West 1/2	1/8"	Lepomis sp.	Bream	UID Element	Midsection	N/A	No	No	No	1	0.2
81.3	5023	205	West 1/2	1/4"	Mammalia (Large)	Large Mammal	UID Longbone	Shaft	N/A	No	No	No	1	3.1
117.3	5023	205	West 1/2	1/4"	Mammalia (Large)	Large Mammal	UID Longbone	N/A	N/A	No	Yes	No	1	2.8
72.3	5023	205	West 1/2	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	Shaft	N/A	No	Yes	No	4	0.4
82.3	5023	205	West 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	No	1	7.8
71.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	Yes	No	1	<0.1
84.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	6	1
85.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Maxilla	Unknown	Unsided	No	No	No	1	<0.1
86.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Femur	Distal end	Unsided	No	No	No	1	<0.1
87.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Metapodial	Distal end	Unsided	No	No	No	1	<0.1
88.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Tibia	Proximal end	Unsided	No	No	No	1	<0.1
89.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Humerus	Proximal end	Unsided	No	No	No	1	<0.1
90.3	5023	205	West 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	3	0.8
133.3	5023	205	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	1	<0.1
11.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	1	<0.1
14.3	5023	205	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	3	7.2
55.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior	Right	No	Yes	No	2	0.2
56.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior	Left	No	Yes	No	1	<0.1
91.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior	Right	No	No	No	3	0.2
92.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior	Left	No	No	No	3	0.2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
93.3	5023	205	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior	Right	No	No	No	1	<0.1
109.3	5023	205	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	1	0.2
83.3	5023	205	West 1/2	1/4"	Odocoileus virginianus	White-tailed Deer	Sesmoid	N/A	Unsided	Yes	No	No	1	0.6
94.3	5023	205	West 1/2	1/8"	Odocoileus virginianus	White-tailed Deer	Lower Incisor	N/A	Unsided	Yes	No	No	1	0.2
44.3	5023	205	West 1/2	1/4"	Rallidae	Crakes, Coots, and Gallinules	Scapula	Articular facet	Left	No	No	No	1	0.6
95.3	5023	205	West 1/2	1/8"	Reptilia	Reptile	Mandible	Medial	Right	No	No	No	1	<0.1
96.3	5023	205	West 1/2	1/8"	Reptilia	Reptile	Mandible	Medial	Left	No	No	No	1	0.1
67.3	5023	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	Yes	No	2	0.3
68.3	5023	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Dorsal Spine	N/A	No	Yes	No	2	<0.1
97.3	5023	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	9	0.8
98.3	5023	205	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Unknown	N/A	No	No	No	3	0.1
99.3	5023	205	West 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	6	2.2
100.3	5023	205	West 1/2	1/4"	Serpentes	Snake	Vertebrae	Dorsal spine	N/A	No	No	No	2	0.4
101.3	5023	205	West 1/2	1/8"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
102.3	5023	205	West 1/2	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	1	0.2
137.3	5023	205	West 1/2	1/8"	Siren sp.	Siren	Vertebrae	Centrum	N/A	No	No	No	1	<0.1
138.3	5023	205	West 1/2	1/8"	Siren sp.	Siren	Atlas	N/A	N/A	Yes	No	No	1	<0.1
154.3	5023	205	West 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 4	N/A	Left	Yes	No	No	1	0.2
162.3	5023	205	West 1/2	1/8"	Sternotherus sp.	Musk Turtle	Marginal 2	N/A	Right	No	No	No	1	<0.1
79.3	5023	205	West 1/2	1/4"	Sylvilagus sp.	Rabbit	Tooth	N/A	Unsided	Yes	No	No	1	<0.1
80.3	5023	205	West 1/2	1/4"	Sylvilagus sp.	Rabbit	Maxilla	Unknown	Left	No	No	No	1	7.8
104.3	5023	205	West 1/2	1/8"	Testudines	Turtle	Dorsal Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
115.3	5023	205	West 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	2	0.6
41.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	2	0.2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
51.3	5023	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	Yes	No	68	3
69.3	5023	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	Yes	No	6	0.6
107.3	5023	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	No	618	33.7
108.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	29	8.7
110.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	5	7.7
118.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	4	8.8
119.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	2	7.2
120.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	3	0.6
125.3	5023	205	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	10	2.3
167.3	5023	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	1	<0.1
170.3	5023	205	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	21	1.4
87.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	Unknown	23	1.5
94.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Dentary	Anterior end	Right	No	No	No	1	<0.1
97.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	N/A	N/A	No	No	No	9	0.6
98.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	91	3.3
99.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	43	1.5
124.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	5	0.4
125.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Quadrate	Anterior end	Right	No	Yes	No	1	<0.1
126.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Dentary	Anterior end	Left	No	Yes	No	1	0.2
127.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Dentary	Mid-section	Unsided	No	Yes	No	1	<0.1
128.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Rays	N/A	N/A	No	Yes	No	1	<0.1
129.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	27	0.9
130.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	7	0.3
169.2	5049	205	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	1	0.4

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
175.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	14	0.7
223.2	5049	205	East 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	19	1.6
103.2	5049	205	East 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	5	<0.1
104.2	5049	205	East 1/2	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	13	0.8
133.2	5049	205	East 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	Yes	No	2	<0.1
146.2	5049	205	East 1/2	1/4"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	2	0.9
156.2	5049	205	East 1/2	1/4"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	Yes	No	1	0.2
140.2	5049	205	East 1/2	1/8"	Anatidae	Ducks, Geese, Swans	Coracoid	Anterior end	Left	No	Yes	No	1	0.2
174.2	5049	205	East 1/2	1/8"	Anura	Frog	Vertebrae	Centrum	N/A	No	No	No	1	<0.1
111.2	5049	205	East 1/2	1/8"	Apalone ferox	Soft-Shelled Turtle	Carapace	N/A	N/A	No	No	No	2	<0.1
149.2	5049	205	East 1/2	1/4"	Apalone ferox	Soft-Shelled Turtle	Carapace	N/A	N/A	No	No	No	1	0.6
115.2	5049	205	East 1/2	1/8"	Aves	Bird	Coracoid	Posterior end	Unsided	No	No	No	1	<0.1
116.2	5049	205	East 1/2	1/8"	Aves	Bird	Humerus	Shaft	Unsided	No	No	No	1	0.2
141.2	5049	205	East 1/2	1/8"	Aves	Bird	Tibiotarsus	Distal end	Right	No	Yes	No	1	0.3
237.2	5049	205	East 1/2	1/8"	Caudata	Salamander	Vertebrae	N/A	N/A	No	No	No	2	0.2
89.2	5049	205	East 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Left	No	No	No	1	<0.1
90.2	5049	205	East 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Right	No	No	No	3	<0.1
145.2	5049	205	East 1/2	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	1	0.3
217.2	5049	205	East 1/2	1/8"	Centrarchidae	Sunfish	Vomer	Anterior end	N/A	No	No	No	3	<0.1
222.2	5049	205	East 1/2	1/8"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	91	4
137.2	5049	205	East 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	Yes	No	4	0.4
177.2	5049	205	East 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	3	0.2
178.2	5049	205	East 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	Centrum	N/A	No	No	No	3	<0.1
219.2	5049	205	East 1/2	1/8"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	4	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
221.2	5049	205	East 1/2	1/8"	Erimyzon sucetta	Lake Chubsucker	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
168.2	5049	205	East 1/2	1/4"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	Yes	2	0.3
218.2	5049	205	East 1/2	1/8"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	No	7	0.4
105.2	5049	205	East 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Anterior end	Left	No	No	No	1	<0.1
106.2	5049	205	East 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Anterior end	Right	No	No	No	1	<0.1
109.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	No	No	33	1.7
136.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	20	1.5
193.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	7	0.5
194.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plurals	N/A	N/A	No	No	No	4	0.4
195.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plastron	N/A	N/A	No	No	No	4	0.3
196.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Neural	N/A	N/A	Yes	No	No	3	<0.1
202.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	Yes	No	1	<0.1
203.2	5049	205	East 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plurals	N/A	N/A	No	Yes	No	2	<0.1
186.2	5049	205	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 8	N/A	Left	No	No	No	1	0.2
187.2	5049	205	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 7	N/A	Right	No	No	No	1	0.5
188.2	5049	205	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 6	N/A	Right	Yes	No	No	1	0.3
235.2	5049	205	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 6	N/A	Right	Yes	Yes	No	1	<0.1
100.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	5	0.2
101.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	7	0.3
102.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	Yes	No	No	8	<0.1
131.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	Yes	No	6	0.4
132.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	Yes	No	4	<0.1
171.2	5049	205	East 1/2	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	No	No	4	0.3
96.2	5049	205	East 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	Unsided	No	No	No	16	1.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
144.2	5049	205	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	4	2
193.2	5049	205	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	2	0.9
197.2	5049	205	East 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	1	0.3
198.2	5049	205	East 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	1	<0.1
199.2	5049	205	East 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	Yes	No	No	1	0.2
200.2	5049	205	East 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	No	No	No	1	<0.1
88.2	5049	205	East 1/2	1/8"	Lepomis sp.	Bream	Maxilla	Anterior end	Right	No	No	No	1	<0.1
143.2	5049	205	East 1/2	1/4"	Lepomis sp.	Bream	Parasphenoid	N/A	N/A	No	No	No	1	0.3
224.2	5049	205	East 1/2	1/8"	Lepomis sp.	Bream	Parasphenoid	Mid-section	N/A	No	No	No	1	<0.1
152.2	5049	205	East 1/2	1/4"	Mammalia (Large)	Large Mammal	UID Element	N/A	N/A	No	No	No	1	0.8
154.2	5049	205	East 1/2	1/4"	Mammalia (Large)	Large Mammal	UID Element	N/A	N/A	No	No	Yes	2	0.8
158.2	5049	205	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	Yes	No	3	2.5
118.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	7	1.1
119.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Metapodial	N/A	Unsided	Yes	No	Unknown	1	<0.1
120.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	N/A	No	No	No	3	0.3
122.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Caudal Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
153.2	5049	205	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	Yes	2	1.3
172.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	N/A	No	No	Unknown	2	0.4
173.2	5049	205	East 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	N/A	No	No	Yes	2	0.8
91.2	5049	205	East 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Right	No	No	No	1	<0.1
92.2	5049	205	East 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	1	<0.1
95.2	5049	205	East 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	1	<0.1
176.2	5049	205	East 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	1	<0.1
201.2	5049	205	East 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Right	No	No	No	2	0.2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
220.2	5049	205	East 1/2	1/8"	Notemigonus crysoleucas	Golden Shiner	Atlas	N/A	N/A	No	No	No	1	<0.1
108.2	5049	205	East 1/2	1/8"	Reptilia	Reptile	Mandible	N/A	Unsided	No	No	No	1	<0.1
112.2	5049	205	East 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	8	0.9
113.2	5049	205	East 1/2	1/8"	Serpentes	Snake	Vertebrae	Dorsal Spine	N/A	No	No	No	4	0.2
121.2	5049	205	East 1/2	1/8"	Serpentes	Snake	Vertebrae	Condyle	N/A	No	No	No	3	<0.1
138.2	5049	205	East 1/2	1/8"	Serpentes	Snake	Vertebrae	Unknown	N/A	No	Yes	No	1	<0.1
150.2	5049	205	East 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.5
179.2	5049	205	East 1/2	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	No	No	5	<0.1
107.2	5049	205	East 1/2	1/8"	Siren sp.	Siren	Vertebrae	N/A	N/A	No	No	No	2	0.2
134.2	5049	205	East 1/2	1/8"	Siren sp.	Siren	Vertebrae	N/A	N/A	No	Yes	No	1	<0.1
135.2	5049	205	East 1/2	1/8"	Siren sp.	Siren	Vertebrae	Centrum	N/A	No	Yes	No	1	<0.1
147.2	5049	205	East 1/2	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	2	0.6
189.2	5049	205	East 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 6	N/A	Left	Yes	No	No	1	0.2
190.2	5049	205	East 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	<0.1
191.2	5049	205	East 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	<0.1
110.2	5049	205	East 1/2	1/8"	Testudines	Turtle	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
148.2	5049	205	East 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	No	No	6	2.4
157.2	5049	205	East 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	1	0.5
170.2	5049	205	East 1/2	1/4"	Testudines	Turtle	Marginal	N/A	N/A	No	No	Yes	1	0.3
192.2	5049	205	East 1/2	1/4"	Testudines	Turtle	Neural	N/A	N/A	Yes	No	No	1	0.3
236.2	5049	205	East 1/2	1/4"	Testudines	Turtle	Plastron	N/A	N/A	No	Yes	No	1	<0.1
86.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	Unknown	372	19.2
93.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	7	0.4
114.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
117.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	No	No	4	0.7
123.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	Yes	Unknown	87	5.3
139.2	5049	205	East 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	Shaft	N/A	No	Yes	No	5	0.5
142.2	5049	205	East 1/2	1/4"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	No	10	3.9
151.2	5049	205	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Longbone	N/A	N/A	No	No	No	2	0.8
155.2	5049	205	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	2	<0.1
7.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	40	2.2
8.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	346	11.6
9.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	84	2.9
10.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vomer	Anterior end	N/A	Yes	No	No	2	<0.1
13.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Maxilla	Anterior end	Left	No	No	No	1	<0.1
15.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Premaxilla	Anterior end	Right	No	No	No	1	<0.1
18.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Rays	Proximal	N/A	Yes	No	No	36	1.6
19.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Otolith	N/A	Unknown	Yes	No	No	1	<0.1
60.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	53	1.8
61.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	8	0.2
62.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Articular	Posterior	Unknown	No	Yes	No	2	0.2
64.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Rays	Proximal	N/A	Yes	Yes	No	4	<0.1
69.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	5	0.5
74.4	5025	201	NE 1/4	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	1	0.2
75.4	5025	201	NE 1/4	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	2	0.3
78.4	5025	201	NE 1/4	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	10	2.8
79.4	5025	201	NE 1/4	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	3	0.5
116.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	16	0.6
141.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	5	0.3

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
142.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	38	2.1
143.4	5025	201	NE 1/4	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	27	2
149.4	5025	201	NE 1/4	1/4"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	No	No	No	1	0.4
30.4	5025	201	NE 1/4	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	8	0.5
31.4	5025	201	NE 1/4	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	No	No	No	3	<0.1
32.4	5025	201	NE 1/4	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	3	<0.1
84.4	5025	201	NE 1/4	1/4"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	8	2.4
85.4	5025	201	NE 1/4	1/4"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	1	<0.1
152.4	5025	201	NE 1/4	1/4"	Amia Calva	Bowfin	Basiooccipital	N/A	N/A	No	No	No	1	0.4
135.4	5025	201	NE 1/4	1/8"	Anatidae	Ducks, Geese, Swans	Quadrate	N/A	Left	No	No	No	1	<0.1
43.4	5025	201	NE 1/4	1/8"	Anatinae	Surface-feeding duck	Coracoid	Anterior end	Left	No	No	No	1	<0.1
153.4	5025	201	NE 1/4	1/4"	Anguilla rostrata	American eel	Basiooccipital	N/A	N/A	No	No	No	1	<0.1
68.4	5025	201	NE 1/4	1/8"	Anura	Frog	Mandible	Unknown	Unknown	No	Yes	No	1	<0.1
107.4	5025	201	NE 1/4	1/4"	Anura	Frog	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
93.4	5025	201	NE 1/4	1/4"	Apalone ferox	Soft-shelled Turtle	Carapace	N/A	N/A	No	No	No	1	0.4
131.4	5025	201	NE 1/4	1/8"	Apalone ferox	Soft-shelled Turtle	Carapace	N/A	N/A	No	No	No	1	<0.1
132.4	5025	201	NE 1/4	1/8"	Apalone ferox	Soft-shelled Turtle	Carapace	N/A	N/A	No	Yes	No	1	<0.1
39.4	5025	201	NE 1/4	1/8"	Aves	Bird	Coracoid	Anterior end	Left	No	No	Unknown	1	<0.1
137.4	5025	201	NE 1/4	1/8"	Aves	Bird	UID Longbone	N/A	N/A	No	No	No	1	<0.1
11.4	5025	201	NE 1/4	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Left	Yes	No	No	6	0.4
12.4	5025	201	NE 1/4	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Right	Yes	No	No	4	0.2
146.4	5025	201	NE 1/4	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	4	0.8
37.4	5025	201	NE 1/4	1/8"	Colubridae	Non-venomous Snake	Vertebrae	N/A	N/A	Yes	No	No	7	0.5
66.4	5025	201	NE 1/4	1/8"	Colubridae	Non-venomous Snake	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
117.4	5025	201	NE 1/4	1/8"	Colubridae	Non-venomous Snake	Vertebrae	Centrum	N/A	No	No	No	5	0.3
119.4	5025	201	NE 1/4	1/8"	Colubridae	Non-venomous Snake	Vertebrae	Centrum	N/A	No	Yes	No	2	0.2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
154.4	5025	201	NE 1/4	1/4"	Colubridae	Non-venomous Snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.3
144.4	5025	201	NE 1/4	1/8"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	6	0.2
140.4	5025	201	NE 1/4	1/8"	Erimyzon sucetta	Lake Chubsucker	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
138.4	5025	201	NE 1/4	1/8"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	No	9	0.8
145.4	5025	201	NE 1/4	1/4"	Esox sp.	Pickerel	Vertebrae	N/A	N/A	Yes	No	No	4	0.9
20.4	5025	201	NE 1/4	1/8"	Ictaluridae	Catfish	Pectoral Spine	Medial end	Right	No	No	No	1	0.2
21.4	5025	201	NE 1/4	1/8"	Ictaluridae	Catfish	Pectoral Spine	Medial end	Left	No	No	No	1	<0.1
22.4	5025	201	NE 1/4	1/8"	Ictaluridae	Catfish	Premaxilla	Unknown	Unknown	No	No	No	1	<0.1
23.4	5025	201	NE 1/4	1/8"	Ictaluridae	Catfish	Dentary	Anterior end	Left	No	No	No	2	0.2
103.4	5025	201	NE 1/4	1/4"	Ictaluridae	Catfish	Articular	Posterior	Right	No	Yes	No	1	<0.1
33.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	No	No	58	3.4
53.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	20	1
129.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	3	<0.1
130.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Neural	N/A	N/A	No	No	No	2	<0.1
133.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Plastron	N/A	N/A	No	Yes	No	3	<0.1
134.4	5025	201	NE 1/4	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	Yes	No	1	<0.1
121.4	5025	201	NE 1/4	1/4"	Kinosternon sp.	Mud Turtle	Marginal 3	N/A	Right	Yes	No	Unknown	1	0.7
122.4	5025	201	NE 1/4	1/4"	Kinosternon sp.	Mud Turtle	Marginal 2	N/A	Right	Yes	No	No	1	0.2
123.4	5025	201	NE 1/4	1/4"	Kinosternon sp.	Mud Turtle	Marginal 3	N/A	Left	Yes	No	No	1	0.3
26.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	Yes	No	No	12	0.3
27.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	No	No	18	0.2
28.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	7	0.5
29.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	10	0.6
58.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	Yes	Yes	No	2	<0.1
59.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	Scales	N/A	N/A	No	Yes	No	8	0.2
86.4	5025	201	NE 1/4	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
87.4	5025	201	NE 1/4	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	No	No	No	1	0.3
104.4	5025	201	NE 1/4	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
112.4	5025	201	NE 1/4	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	Yes	No	1	<0.1
17.4	5025	201	NE 1/4	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	Unknown	Unknown	No	No	No	14	1
63.4	5025	201	NE 1/4	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	Unknown	Unknown	No	Yes	No	7	0.6
76.4	5025	201	NE 1/4	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	Unknown	Unknown	Yes	No	No	3	2.2
77.4	5025	201	NE 1/4	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	Unknown	Unknown	No	No	No	3	0.9
126.4	5025	201	NE 1/4	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	1	0.2
151.4	5025	201	NE 1/4	1/4"	Lepomis microlophus	Shellcracker	Basiooccipital	N/A	N/A	Yes	No	No	1	0.3
24.4	5025	201	NE 1/4	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior end	Right	No	No	No	1	<0.1
25.4	5025	201	NE 1/4	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
125.4	5025	201	NE 1/4	1/8"	Lepomis sp.	Bream	Parasphenoid	Midsection	N/A	No	No	No	4	0.3
127.4	5025	201	NE 1/4	1/8"	Lepomis sp.	Bream	Vomer	Anterior end	N/A	No	No	No	2	<0.1
148.4	5025	201	NE 1/4	1/4"	Lepomis sp.	Bream	Parasphenoid	Midsection	N/A	No	No	No	1	<0.1
51.4	5025	201	NE 1/4	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	Teeth	Unknown	Unknown	No	No	No	1	<0.1
52.4	5025	201	NE 1/4	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	Shaft	Unknown	No	No	No	4	0.8
56.4	5025	201	NE 1/4	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	Shaft	Unknown	No	Yes	No	2	0.3
100.4	5025	201	NE 1/4	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	Yes	5	1.7
101.4	5025	201	NE 1/4	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	No	3	1
102.4	5025	201	NE 1/4	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	No	7	3.6
110.4	5025	201	NE 1/4	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	Yes	No	2	0.7
44.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	Unknown	No	No	No	11	7.7
45.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	1	<0.1
46.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	Yes	18	1.8
47.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Phalanx	Distal end	Unknown	No	No	No	2	<0.1
					Row Intentionally	Left Blank								

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
54.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	Unknown	No	Yes	No	5	0.2
55.4	5025	201	NE 1/4	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	Unknown	No	Yes	Yes	1	<0.1
94.4	5025	201	NE 1/4	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	Unknown	No	No	No	1	0.4
95.4	5025	201	NE 1/4	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Phalanx	N/A	Unknown	Yes	No	No	1	0.2
96.4	5025	201	NE 1/4	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Ulna	Proximal end	Unknown	No	No	No	1	1.2
109.4	5025	201	NE 1/4	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	Unknown	No	Yes	No	1	0.2
14.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior end	Right	No	No	No	1	<0.1
16.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	2	0.2
80.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Right	No	No	No	1	4.8
81.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	2	0.6
82.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Right	No	No	No	1	0.2
83.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Articular	Posterior	Right	No	No	No	2	2.6
113.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Right	No	No	No	2	<0.1
114.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
115.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior end	Left	No	No	No	2	0.2
128.4	5025	201	NE 1/4	1/8"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	1	<0.1
147.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	2	0.2
150.4	5025	201	NE 1/4	1/4"	Micropterus salmoides	Large-Mouth Bass	Basiooccipital	N/A	N/A	No	No	No	1	0.3
139.4	5025	201	NE 1/4	1/8"	Notemigonus crysoleucas	Golden Shiner	Atlas	N/A	N/A	No	No	No	1	<0.1
38.4	5025	201	NE 1/4	1/8"	Reptilia	Reptile	Mandible	Unknown	Right	No	No	No	1	<0.1
136.4	5025	201	NE 1/4	1/8"	Rodentia	Rodent	Femur	Proximal end	Unknown	No	No	No	1	<0.1
35.4	5025	201	NE 1/4	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	No	No	6	0.2
36.4	5025	201	NE 1/4	1/8"	Serpentes	Snake	Vertebrae	Dorsal Spine	N/A	No	No	No	3	0.3
65.4	5025	201	NE 1/4	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	Yes	None	1	<0.1
67.4	5025	201	NE 1/4	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	Yes	No	2	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
88.4	5025	201	NE 1/4	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	4	1.3
89.4	5025	201	NE 1/4	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	Unknown	1	0.3
90.4	5025	201	NE 1/4	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	Unknown	1	1.8
91.4	5025	201	NE 1/4	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	No	No	No	1	0.2
106.4	5025	201	NE 1/4	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	Yes	No	2	0.5
118.4	5025	201	NE 1/4	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
155.4	5025	201	NE 1/4	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	No	No	No	1	<0.1
120.4	5025	201	NE 1/4	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	<0.1
48.4	5025	201	NE 1/4	1/8"	Sylvilagus sp.	Rabbit	Femur	Proximal head	Right	No	No	No	1	0.2
49.4	5025	201	NE 1/4	1/8"	Sylvilagus sp.	Rabbit	Femur	Distal lateral articular facet	Right	No	No	No	1	<0.1
50.4	5025	201	NE 1/4	1/8"	Sylvilagus sp.	Rabbit	Teeth	Unknown	Unknown	No	No	No	3	0.2
97.4	5025	201	NE 1/4	1/4"	Sylvilagus sp.	Rabbit	Mandible	Horizontal ramus	Left	No	No	No	1	1.5
98.4	5025	201	NE 1/4	1/4"	Sylvilagus sp.	Rabbit	Mandible	Horizontal ramus	Left	No	No	No	1	1.6
99.4	5025	201	NE 1/4	1/4"	Sylvilagus sp.	Rabbit	Teeth	N/A	Unknown	Yes	No	No	1	0.3
34.4	5025	201	NE 1/4	1/8"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	No	No	1	<0.1
92.4	5025	201	NE 1/4	1/4"	Testudines	Turtle	Plural	N/A	N/A	No	No	No	1	0.6
105.4	5025	201	NE 1/4	1/4"	Testudines	Turtle	Carapace/Plastron	Unknown	Unknown	No	Yes	No	1	0.2
124.4	5025	201	NE 1/4	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	No	No	2	0.5
1.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	35	1.5
2.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Yes	47	2.6
3.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	441	15.9
4.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Unknown	63	2.6
5.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	220	8.7
6.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	6	0.2
40.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	12	0.3

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
41.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	13	0.6
42.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	13	0.7
57.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Longbone	N/A	N/A	No	Yes	No	8	0.5
70.4	5025	201	NE 1/4	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	Unknown	133	5.5
71.4	5025	201	NE 1/4	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	20	3.8
72.4	5025	201	NE 1/4	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	17	3.9
73.4	5025	201	NE 1/4	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Unknown	3	1.2
108.4	5025	201	NE 1/4	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	5	0.8
111.4	5025	201	NE 1/4	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	Yes	1	<0.1
107.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	27	3.9
108.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Yes	4	0.8
109.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	2	<0.1
126.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Ray	N/A	N/A	No	No	No	2	0.3
138.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	8	1.8
139.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	2	1.1
145.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	2	0.5
162.1	5003	200	East 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	3	0.6
112.1	5003	200	East 1/2	1/4"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	2	0.5
134.1	5003	200	East 1/2	1/4"	Apalone ferox	Soft-shelled Turtle	Carapace	N/A	N/A	No	No	No	1	0.3
180.1	5003	200	East 1/2	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	12	2.3
120.1	5003	200	East 1/2	1/4"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	6	7.8
159.1	5003	200	East 1/2	1/4"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	No	No	No	1	0.6
179.1	5003	200	East 1/2	1/4"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	3	0.3
122.1	5003	200	East 1/2	1/4"	Ictaluridae	Catfish	Pectoral Spine	Anterior end	Left	No	No	No	1	0.3
119.1	5003	200	East 1/2	1/4"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	Unknown	Yes	No	No	2	0.4

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
158.1	5003	200	East 1/2	1/4"	Kinosternidae	Mud/Musk Turtle	Plural	N/A	N/A	Yes	No	No	1	0.2
154.1	5003	200	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 4	Margin	Left	No	No	No	1	<0.1
155.1	5003	200	East 1/2	1/4"	Kinosternon sp.	Mud Turtle	Nuchal	N/A	N/A	Yes	No	No	1	0.5
110.1	5003	200	East 1/2	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	1	7.6
111.1	5003	200	East 1/2	1/4"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	2	0.3
104.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	3	0.4
105.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	No	No	11	3.9
106.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	Yes	1	0.7
144.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	Yes	No	1	0.2
160.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	Yes	No	No	3	1.5
161.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	Yes	No	No	3	2
183.1	5003	200	East 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	4	1.6
115.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	Cranium	N/A	N/A	No	No	Yes	1	3.7
116.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	Maxilla	Orbital surface	N/A	No	No	Yes	1	1.1
117.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	No	1	3.4
118.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Yes	2	1.6
135.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	No	3	1.4
142.1	5003	200	East 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	Yes	No	1	3.3
133.1	5003	200	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Pelvis	Left side	N/A	No	No	No	1	0.2
136.1	5003	200	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	No	2	0.6
137.1	5003	200	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Cranium	N/A	N/A	No	No	No	2	0.3
140.1	5003	200	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	2	0.3
141.1	5003	200	East 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	1	0.2
123.1	5003	200	East 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior end	Right	No	No	No	1	0.2

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
124.1	5003	200	East 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	1	<0.1
125.1	5003	200	East 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	1	0.6
127.1	5003	200	East 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Maxilla	N/A	N/A	No	No	No	1	0.4
163.1	5003	200	East 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Atlas	N/A	N/A	Yes	No	No	1	0.3
113.1	5003	200	East 1/2	1/4"	Odocoileus virginianus	White-tailed Deer	Metacarpal	Distal End	Unknown	No	No	Yes	1	7.8
114.1	5003	200	East 1/2	1/4"	Odocoileus virginianus	White-tailed Deer	Mandible	Condylar Process	Left	No	No	Yes	1	2.4
121.1	5003	200	East 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.3
156.1	5003	200	East 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Left	Yes	No	No	1	0.2
157.1	5003	200	East 1/2	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	0.2
132.1	5003	200	East 1/2	1/4"	Testudines	Turtle	Femur	N/A	Left	Yes	No	No	1	1
147.1	5003	200	East 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	1	<0.1
128.1	5003	200	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	38	7.4
129.1	5003	200	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	15	3.5
130.1	5003	200	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Unknown	3	2.6
131.1	5003	200	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Yes	9	2.8
143.1	5003	200	East 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	5	0.8
2.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	42	1.3
3.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	42	1.3
4.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	28	2.3
5.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	7	0.7
6.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Yes	11	0.9
7.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Yes	5	0.3
8.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	270	11.7
10.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Maxilla	Anterior end	Right	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
15.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
20.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Ray	Medial end	N/A	No	No	No	22	1
21.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Ray	Medial end	N/A	No	No	Yes	1	<0.1
22.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Ray	Medial end	N/A	No	No	No	8	0.4
38.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Otolith	N/A	Unknown	Yes	No	No	1	<0.1
39.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	13	0.8
40.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	35	1.3
57.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	21	0.8
58.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	Yes	No	7	<0.1
61.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Ray	N/A	N/A	No	Yes	No	3	<0.1
69.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	5	0.2
71.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	13	2.2
72.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	8	2.9
73.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	2	0.2
89.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	1	2
90.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	No	4	1.3
91.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	No	Unknown	1	0.5
101.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	UID Element	N/A	N/A	No	Yes	No	1	<0.1
102.1	5006	200	West 1/2	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
148.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Atlas	N/A	N/A	Yes	No	No	13	0.5
178.1	5006	200	West 1/2	1/8"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	Unknown	10	0.7
23.1	5006	200	West 1/2	1/8"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	5	0.3
24.1	5006	200	West 1/2	1/8"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	1	<0.1
16.1	5006	200	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Left	No	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
36.1	5006	200	West 1/2	1/8"	Centrarchidae	Sunfish	Quadrate	Anterior end	Right	No	No	No	1	<0.1
177.1	5006	200	West 1/2	1/8"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	19	1.2
165.1	5006	200	West 1/2	1/4"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.4
170.1	5006	200	West 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	Centrum	N/A	No	No	No	2	<0.1
175.1	5006	200	West 1/2	1/8"	Colubridae	Non-venomous snake	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
176.1	5006	200	West 1/2	1/8"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	4	<0.1
25.1	5006	200	West 1/2	1/8"	Ictaluridae	Catfish	Pectoral Spine	Anterior end	Right	No	No	No	1	<0.1
97.1	5006	200	West 1/2	1/4"	Ictaluridae	Catfish	Articular	Articular facet	Left	No	No	No	1	0.4
41.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	No	No	57	2.4
42.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	Yes	1	<0.1
64.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	15	0.8
171.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	7	0.4
172.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Neural	N/A	N/A	Yes	No	No	1	<0.1
173.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Plural	N/A	N/A	No	No	No	5	0.3
174.1	5006	200	West 1/2	1/8"	Kinosternidae	Mud/Musk Turtle	Marginal	N/A	N/A	No	No	No	1	<0.1
151.1	5006	200	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Left	Yes	No	No	1	0.4
152.1	5006	200	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Marginal 8	N/A	Left	No	No	No	1	0.3
153.1	5006	200	West 1/2	1/4"	Kinosternon sp.	Mud Turtle	Pygal	N/A	N/A	Yes	No	No	1	0.3
26.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	Yes	No	No	10	0.4
27.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	No	No	4	<0.1
28.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	No	No	4	<0.1
29.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	No	No	13	0.6
30.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	No	No	Yes	1	<0.1
31.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	3	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
59.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
60.1	5006	200	West 1/2	1/8"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	Yes	No	2	<0.1
17.1	5006	200	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	Unknown	No	No	No	16	1.3
18.1	5006	200	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	Unknown	No	No	No	2	0.2
19.1	5006	200	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	Yes	No	No	1	<0.1
62.1	5006	200	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	Yes	No	2	0.2
74.1	5006	200	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	Yes	No	No	1	0.9
75.1	5006	200	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	Yes	No	No	1	0.4
76.1	5006	200	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Pharyngeal Grinder	N/A	N/A	No	No	No	4	0.8
77.1	5006	200	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	1	1
149.1	5006	200	West 1/2	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	No	No	No	1	0.4
169.1	5006	200	West 1/2	1/8"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	No	No	No	1	0.2
9.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Maxilla	Anterior end	Right	No	No	No	1	<0.1
11.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Dentary	Anterior end	Left	No	No	No	1	<0.1
14.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
37.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior end	Right	No	No	No	1	<0.1
168.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Premaxilla	Anterior end	Left	No	No	No	3	<0.1
182.1	5006	200	West 1/2	1/8"	Lepomis sp.	Bream	Parasphenoid	Mid-section	N/A	No	No	No	2	<0.1
52.1	5006	200	West 1/2	1/8"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	No	No	2	0.3
86.1	5006	200	West 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Unknown	3	2.5
87.1	5006	200	West 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Yes	4	6.2
88.1	5006	200	West 1/2	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	No	2	2.5
49.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	11	1
50.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	No	12	0.9

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
51.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	Yes	1	<0.1
53.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Element	N/A	N/A	No	No	No	16	1
54.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Tarsal	N/A	N/A	Yes	No	No	1	<0.1
55.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Molar	N/A	N/A	Yes	No	No	1	<0.1
68.1	5006	200	West 1/2	1/8"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	Yes	No	5	0.4
85.1	5006	200	West 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	No	1	0.3
99.1	5006	200	West 1/2	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	No	3	0.6
100.1	5006	200	West 1/3	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	N/A	N/A	No	No	No	1	0.2
1.1	5006	200	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Vomer	Anterior end	N/A	No	No	No	1	<0.1
12.1	5006	200	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Left	No	No	No	1	<0.1
63.1	5006	200	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Dentary	Anterior end	Right	No	Yes	No	1	<0.1
98.1	5006	200	West 1/2	1/4"	Micropterus salmoides	Large-Mouth Bass	Maxilla	Anterior end	Left	No	No	No	1	0.2
167.1	5006	200	West 1/2	1/8"	Micropterus salmoides	Large-Mouth Bass	Premaxilla	Anterior end	Left	No	No	No	1	<0.1
164.1	5006	200	West 1/2	1/4"	Nerodia sp.	Water Snake	Vertebrae	N/A	N/A	Yes	No	Unknown	1	0.3
13.1	5006	200	West 1/2	1/8"	Pomoxis nigromaculatus	Black Crappie	Dentary	Anterior end	Right	No	No	No	1	<0.1
48.1	5006	200	West 1/2	1/8"	Reptilia	Reptile	Mandible	Unknown	Unknown	No	No	Yes	1	<0.1
44.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	3	<0.1
45.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	No	No	No	6	0.2
46.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	No	No	3	<0.1
47.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	No	No	2	<0.1
65.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	Yes	No	1	<0.1
66.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	N/A	N/A	No	Yes	No	1	<0.1
67.1	5006	200	West 1/2	1/8"	Serpentes	Snake	Vertebrae	Centrum	N/A	No	Yes	No	1	<0.1
80.1	5006	200	West 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.5

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
81.1	5006	200	West 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	2	0.5
82.1	5006	200	West 1/2	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	No	No	No	1	0.2
83.1	5006	200	West 1/2	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	2	0.9
181.1	5006	200	West 1/2	1/8"	Siren sp.	Siren	Vertebrae	N/A	N/A	No	No	No	1	<0.1
43.1	5006	200	West 1/2	1/8"	Testudines	Turtle	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1
78.1	5006	200	West 1/2	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	No	No	3	0.2
79.1	5006	200	West 1/2	1/4"	Testudines	Turtle	Plural	N/A	N/A	No	No	No	1	9.5
96.1	5006	200	West 1/2	1/4"	Testudines	Turtle	Vertebrae	Centrum	N/A	No	No	No	1	0.3
150.1	5006	200	West 1/2	1/4"	Testudines	Turtle	Marginal	N/A	N/A	No	No	No	3	0.6
166.1	5006	200	West 1/2	1/4"	Testudines	Turtle	Plastron	N/A	N/A	No	No	No	1	1.5
32.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	422	13.7
33.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	283	11.2
34.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Yes	19	1.3
35.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Unknown	51	2.9
56.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Longbone	N/A	N/A	No	No	No	1	<0.1
70.1	5006	200	West 1/2	1/8"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	61	2.6
84.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Longbone	N/A	N/A	No	No	No	1	<0.1
92.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	17	3.1
93.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Yes	7	1.9
94.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	No	11	2.3
95.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	No	Unknown	1	0.3
103.1	5006	200	West 1/2	1/4"	Vertebrata	UID Vertebrate	UID Element	N/A	N/A	No	Yes	No	5	1.1
1.5	5022	ST2	N/A	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	No	No	No	2	0.5
8.5	5022	ST2	N/A	1/4"	Actinopterygii	Ray-Finned Fish	Cleithrum	Midsection	Unsided	No	No	No	1	0.4

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
37.5	5022	ST2	N/A	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	Yes	No	1	0.4
70.5	5022	ST2	N/A	1/4"	Actinopterygii	Ray-Finned Fish	Vomer	Anterior	N/A	Yes	No	No	1	0.2
81.5	5022	ST2	N/A	1/4"	Actinopterygii	Ray-Finned Fish	Vertebrae	N/A	N/A	Yes	No	No	12	7.8
9.5	5022	ST2	N/A	1/4"	Amia Calva	Bowfin	Vertebrae	N/A	N/A	Yes	No	No	4	0.6
10.5	5022	ST2	N/A	1/4"	Amia Calva	Bowfin	UID Element	N/A	N/A	No	No	No	2	<0.1
14.5	5022	ST2	N/A	1/4"	Anatidae	Ducks, Geese, Swans	Scapula	Proximal End	Left	No	No	No	1	7.5
16.5	5022	ST2	N/A	1/4"	Anatidae	Ducks, Geese, Swans	Sternum	Cranial Process of Manubrium	N/A	No	No	No	1	0.6
11.5	5022	ST2	N/A	1/4"	Anura	Frog	Illium	Posterior/Acetabulum	Left	No	No	No	1	<0.1
12.5	5022	ST2	N/A	1/4"	Anura	Frog	Scapula	N/A	Right	Yes	No	No	1	<0.1
13.5	5022	ST2	N/A	1/4"	Apalone ferox	Soft-Shelled Turtle	Carapace	N/A	N/A	No	No	No	3	7.2
15.5	5022	ST2	N/A	1/4"	Aves	Bird	Tibiotarsus	Distal Shaft	Right	No	No	No	1	0.4
72.5	5022	ST2	N/A	1/4"	Caudata	Salamander	Vertebrae	N/A	N/A	Yes	No	No	2	0.6
7.5	5022	ST2	N/A	1/4"	Centrarchidae	Sunfish	Quadrate	Anterior	Left	No	No	No	2	3.5
76.5	5022	ST2	N/A	1/4"	Centrarchidae	Sunfish	Atlas	N/A	N/A	Yes	No	No	2	<0.1
80.5	5022	ST2	N/A	1/4"	Centrarchidae	Sunfish	Vertebrae	N/A	N/A	Yes	No	No	15	2.2
78.5	5022	ST2	N/A	1/4"	Cypriniformes	Minnow	Vertebrae	N/A	N/A	Yes	No	No	1	0.2
17.5	5022	ST2	N/A	1/4"	Ictaluridae	Catfish	Cleithrum	Midsection	Left	No	No	No	1	<0.1
48.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Marginal 3	N/A	Right	Yes	No	No	1	0.5
49.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Right	Yes	No	No	1	0.3
50.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Marginal 10	N/A	Right	Yes	No	No	1	0.1
51.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Marginal 9	N/A	Left	Yes	No	No	1	0.4
62.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Nuchal	N/A	N/A	Yes	No	No	1	0.6
64.5	5022	ST2	N/A	1/4"	Kinosternon sp.	Mud Turtle	Hypoplastron	N/A	Right	Yes	No	No	1	0.7
18.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	UID Element	N/A	N/A	No	No	No	4	0.6
19.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	No	No	No	1	0.9

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
20.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	No	No	2	0.4
38.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	Vertebrae	N/A	N/A	Yes	Yes	No	1	0.2
39.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	Scale	N/A	N/A	No	Yes	No	1	<0.1
47.5	5022	ST2	N/A	1/4"	Lepisosteus sp.	Gar	Parasphenoid	Midsection	N/A	No	No	No	1	0.6
2.5	5022	ST2	N/A	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Right	Yes	No	No	3	7.7
45.5	5022	ST2	N/A	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Right	Yes	No	No	2	0.6
46.5	5022	ST2	N/A	1/4"	Lepomis microlophus	Shellcracker	Lower Pharyngeal Grinder	N/A	Left	No	No	No	4	7.8
68.5	5022	ST2	N/A	1/4"	Lepomis microlophus	Shellcracker	Upper Pharyngeal Grinder	N/A	Left	Yes	No	No	7	1.4
69.5	5022	ST2	N/A	1/4"	Lepomis sp.	Bream	Pharyngeal Grinder	N/A	N/A	No	No	No	6	7.6
21.5	5022	ST2	N/A	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	Tooth	Unknown	Unsided	No	No	No	1	<0.1
22.5	5022	ST2	N/A	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	No	2	7.8
41.5	5022	ST2	N/A	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Longbone	N/A	N/A	No	Yes	No	1	0.7
43.5	5022	ST2	N/A	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	No	1	7.9
44.3	5022	ST2	N/A	1/4"	Mammalia (Med.-Lg.)	Med.-Lg. Mammal	UID Element	N/A	N/A	No	No	Yes	2	<0.1
23.5	5022	ST2	N/A	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	N/A	No	No	No	10	5.8
24.5	5022	ST2	N/A	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	Femur	Proximal head	Unsided	No	No	No	1	0.6
42.5	5022	ST2	N/A	1/4"	Mammalia (Sm.-Med.)	Sm.-Med. Mammal	UID Longbone	Shaft	N/A	No	No	No	4	4.1
25.5	5022	ST2	N/A	1/4"	Meleagris gallopavo	Turkey	Pelvis	Acetabulum Margin	Left	No	No	No	1	7.8
26.5	5022	ST2	N/A	1/4"	Meleagris gallopavo	Turkey	Ulna	Proximal Fragment	Left	No	No	No	1	0.2
3.5	5022	ST2	N/A	1/4"	Micropterus salmoides	Large-mouth Bass	Vomer	Anterior	N/A	No	No	No	1	0.2
4.5	5022	ST2	N/A	1/4"	Micropterus salmoides	Large-mouth Bass	Premaxilla	Anterior	Left	No	No	No	2	0.6
5.5	5022	ST2	N/A	1/4"	Micropterus salmoides	Large-mouth Bass	Premaxilla	Anterior	Right	No	No	No	1	<0.1
6.5	5022	ST2	N/A	1/4"	Micropterus salmoides	Large-mouth Bass	Maxilla	Anterior	Left	No	No	No	1	0.3
77.5	5022	ST2	N/A	1/4"	Micropterus salmoides	Large-mouth Bass	Atlas	N/A	N/A	No	No	No	1	7.3
79.5	5022	ST2	N/A	1/4"	Mugil sp.	Mullet	Vertebrae	N/A	N/A	Yes	No	No	1	<0.1

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
27.5	5022	ST2	N/A	1/4"	Odocoileus virginianus	White-tailed Deer	Humerus	Distal End	Left	No	No	No	1	43.3
30.5	5022	ST2	N/A	1/4"	Oryzomys sp.	Marsh Rat	Mandible	N/A	Left	Yes	No	No	1	<0.1
28.5	5022	ST2	N/A	1/4"	Rodentia	Rodent	Femur	N/A	Left	Yes	No	No	1	<0.1
29.5	5022	ST2	N/A	1/4"	Rodentia	Rodent	Femur	N/A	Right	No	No	No	1	0.2
31.5	5022	ST2	N/A	1/4"	Rodentia	Rodent	Pelvis	Acetabulum Margin	Right	No	No	No	1	<0.1
32.5	5022	ST2	N/A	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	Yes	No	No	20	6.3
33.5	5022	ST2	N/A	1/4"	Serpentes	Snake	Vertebrae	N/A	N/A	No	No	No	1	<0.1
71.5	5022	ST2	N/A	1/4"	Siren sp.	Siren	Vertebrae	N/A	N/A	Yes	No	No	2	0.3
52.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	0.2
53.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 1	N/A	Left	Yes	No	No	1	0.4
54.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 2	N/A	Left	Yes	No	No	1	0.4
55.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Left	Yes	No	No	1	0.3
56.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 1	N/A	Right	Yes	No	No	1	0.4
57.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 2	N/A	Right	Yes	No	No	1	0.4
58.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 3	N/A	Right	Yes	No	No	1	<0.1
59.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 2	N/A	Left	Yes	No	No	1	<0.1
60.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Marginal 10	N/A	Left	Yes	No	No	1	<0.1
63.5	5022	ST2	N/A	1/4"	Sternotherus sp.	Musk Turtle	Hypoplastron	N/A	Left	Yes	No	No	1	0.4
34.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Plural	N/A	N/A	No	No	No	26	5.8
40.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	Yes	No	5	0.6
61.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Neural	N/A	N/A	Yes	No	No	2	7.6
65.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Marginal	N/A	N/A	Yes	No	No	5	7.8
66.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Plastron	N/A	N/A	No	No	No	5	8.7
67.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Carapace/Plastron	N/A	N/A	No	No	No	14	2.8
73.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Vertebrae	N/A	N/A	No	No	No	2	<0.1
74.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Plastron	N/A	N/A	No	Yes	No	2	7.6

Spec. ID	Bag Number	Feature	Section	Size Grade	Scientific Name	Common Name	Element	Portion	Side	Complete	Burnt	Weath.	NISP	Weight (g)
75.5	5022	ST2	N/A	1/4"	Testudines	Turtle	Plural	N/A	N/A	No	Yes	No	4	0.6
35.5	5022	ST2	N/A	1/4"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	No	Unknown	125	23.1
36.5	5022	ST2	N/A	1/4"	Vertebrata	UID Vertebrate	N/A	N/A	N/A	No	Yes	Unknown	16	2.8