# Refining Point Types in Southwest Mississippi

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# Chapter 1: Introduction

The Lower Mississippi Valley (LMV) is home to some of the richest and most well-studied archaeological sites in the United States. This archaeology is well-documented in regard to its mounds, culture, and ceramic assemblages. However, the lithic material from this area has been drastically understudied. Several books offer type descriptions of projectile points (Bell 1958; McGahey 2000; Webb 1981; Williams and Brain 1983, to name a few), but they offer dissenting and incomplete accounts. Thus, the stone-tool typology in the Lower Mississippi Valley is in dire need of reform.

In an attempt to put lithic knowledge on par with that of ceramics in Mississippi, I have undertaken a long-term project to study the projectile points from the Feltus Mounds (22Je500), a Coles Creek period site in Jefferson County, Mississippi, and its surrounding areas. The first goal of this study is to classify the points into the existing types. By doing this, I will be able to determine if the Feltus collections fit into existing point types or if new types and/or reform are needed.

As a second objective, I will closely examine the Woodland period point types, especially the Collins and Alba points, to determine if these types and varieties are statistically useful and consistent with other collections. Specifically, I will analyze the type-variety system, as used by Williams and Brain (1983), to discern if the varieties are distinct or if they merely represent different stages of reduction. To perform this research, I will move away from standard metric data and conduct morphometric analysis using landmark technology and computer programing to take more detailed and non-standard measurements. From this analysis, I will offer new ways to study point morphology.

Further, as this project aims to study projectile point technology at Feltus, I will also discuss the different stone materials used to produce these tools and explore possible locations for lithic sourcing. By the end of this study, I hope we will have a better understanding of the Mississippi projectile point assemblage.

This project goes beyond mere classification. By fine-tuning the types, we can take a closer look at the processes of lithic production, from sourcing to retouching. It is these aspects of technology that can reflect social processes and decision-making (Lechtman 1977; Lemmonier 1986). For example, if I can show that the Collins varieties are simply different stages of lithic reduction, we may gain insights to how the inhabitants of Feltus viewed point shapes and recycled their materials. With this study, I hope to open doors to deeper research into the technical processes and choices that were made at Feltus during the Woodland period.

## Archaeology in the Lower Mississippi Valley and Chronology

While the earliest dates are disputed, many agree that people began to inhabit the southeastern United States by about 12,000 BP, toward the end of a glacial period. The Paleoindian people formed small bands of nomadic hunter-gatherers, marked by lanceolate, often fluted points (Anderson et al. 1996; Steponaitis 1986).

These nomadic bands persisted through the Early Archaic period (circa 8,000 BC), employging seasonal foraging and collecting patterns as the Hypsithermal hailed warmer temperatures and led megafauna into extinction (Anderson and Hanson 1988; Brain 1971).

The Middle Archaic (circa 6,000 BC) represents a shift in lifestyle as foragers became increasingly sedentary. To form alliances and gain access to distant resources, these people interacted in exchange networks across the Southeast, trading points, stone material, and other resources (Jefferies 1996; Johnson and Brookes 1989). This period also saw the first instances of mound construction and complex ritual and the beginnings of horticulture (Fritz 1999). It is likely that there are some Middle Archaic earthenworks near the Feltus site, present perhaps at the Bates Mounds 1 and 2 and possibly the Pumpkin Lake mound (George Bates, personal communication 2012). The Late Archaic, beginning in 4,000 BC, saw an increase in ritual and intergroup exchange, as evinced by sites like Poverty Point (Kidder 2010).

These trends of mound-building and horticulture intensified in the Woodland periods (circa 1000 BC to AD 1100). As sedentism became more common, people developed ceramic technology and constructed mounds for elaborate burial rituals (Kassabaum 2007; Steponaitis 1986). The latter portion of this period is called Coles Creek, dating to (AD 700-1200) (Steponaitis et al. in press). This period saw a decrease in long-distance trade and a local increase in social differentiation, although people still relied heavily on foraging instead of farming. Flat-topped mounds were built around plazas and may have been for burials or as status markers (Kidder 2004; Steponaitis 1986; Steponaitis et al. 2013, in press). These changes are well represented in the Feltus site (Steponaitis et al. 2012a, 2013 in press).

## The Feltus Site

First excavated by Montroville W. Dickson in the 1840s, Feltus is situated on a loess bluff in the southwest corner of Mississippi, a few miles from the current town of Natchez. The site was first mapped by B.L.C. Wailes in 1852 and excavated by Warren King Moorehead in 1924, Harvard University's "Lower Mississippi Survey" in 1971, and the Research Laboratories of Archaeology at UNC-Chapel Hill for four field seasons (2006, 2007, 2010, and 2012) (Steponaitis et al. 2013, in press).

Feltus was occupied between AD 750 and 1100. There were originally four mounds (A, B, C, and D), each at one of the cardinal directions around a central plaza, and all but Mound D still stand. Mounds A and B are both platform mounds; Mound B contained some sort of wooden structure, while there is no evidence for structures on Mound A. Mound C, to the east of the plaza, is a burial mound surrounded by a moat, and, according to Moorehead, Mound D contained several burials as well. The RLA undertook excavations in 2010 to search for the lost Mound D and found an enormous borrow pit beside it (Steponaitis et al. 2012a, in press).

Evidence from large post-pit deposits and large ceramic vessels suggests that Feltus was used as a gathering location for ritual offerings and feasting even 150 years before mound construction began (Steponaitis et al. 2012a, in press). Further, there is little evidence for cultigens or residential living at Feltus, suggesting this site was used mostly as a ceremonial center, perhaps for burials and other feasting occasions (Kassabaum 2007; Steponaitis et al. 2012a, in press).

Despite the lack of long-term habitation, the site still yields a great number of projectile points in both mound and pit contexts. It is these points and those found in surrounding areas that are the focus of this research.

## The Collections

The sample of points used for this study comes from three different sources. The UNC-Chapel Hill's Research Laboratories of Archaeology recovered 116 broken and whole points from the Feltus Mounds site, from excavations mostly during the 2006, 2007, 2010, and 2012 field seasons. These points were systematically excavated and thus have specific contexts in regard to their relation to the mounds, storage pits, and other features.

To increase my sample size, I received generous loans from two collectors, Robert Prospere and Joseph "Smokye" Frank. Frank's collection consists of 23 points and tools from unspecified ground-level contexts of the Feltus Mounds and surrounding areas. Frank found these points over several decades.

The Prospere Collection consists of 752 points that were surface-collected from the Feltus site and nine surrounding fields. With landowner permission, Prospere collected most of the points in the 1970s, and a small percentage of them were purchased for a quarter from a little boy who lived near Feltus. Prospere remembered the location of each point for a few decades before he drew diagrams indicating the general provenience of each point (Figure 1.1 and Figure 1.2). In March 2011, I met with Prospere to borrow the points, which we put into carrying display cases based on their contexts. Prospere's memory and his diagrams did not always agree, and we cannot be completely certain of the points he bought.

Less than half of the points came from these display cases, however. The other half were stored in Tupperware in Prospere's basement, also sorted by provenience. Prospere delivered these points to me a few days after I had obtained the display-case points. Thus, the accuracy of each point's context cannot necessarily be guaranteed, but I must assume they are correct for the purposes of this analysis.

When Robert Prospere loaned me his points, he also gave me a map he drew of the fields he had collected (Figure 1.3). I have taken this map and situated the fields onto satellite imagery using aerial photos from the 1970s and Google Earth historical imagery dating from 1989 to 2009 (Figure 1.4 and Figure 1.5).

The Feltus site is situated on the edge of the Natchez Bluffs, approximated by the green line in Figure 1.4. In the center is Field 1, also called Feltus 1 (F-1 in the diagram), which is the Feltus site itself, surrounded by Mounds A, B, and C. The majority of Prospere's points, 425 in all, were found in this field, which is also where the RLA's and most of Frank's points were

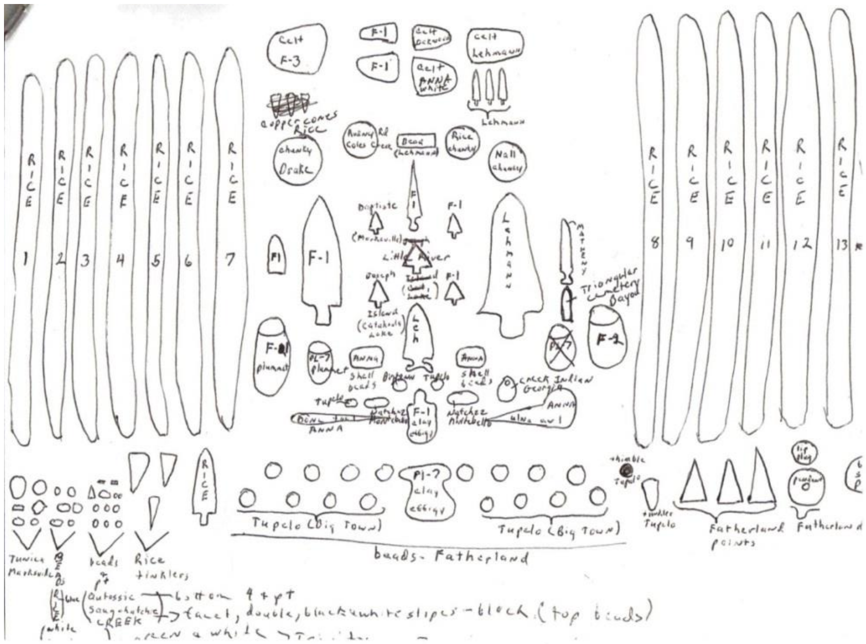


**Figure 1.1: Prospere Diagram 1. This is a diagram Robert Prospere made of one of his display cases. Most of these items are not from Feltus and thus are not included in this analysis. There are five points in the center of the diagram labeled F1 to designate that they were collected from Field 1. These were Prospere's favorite points (F1-78, F1-79, F1-80, F1-81, and F1-82)**

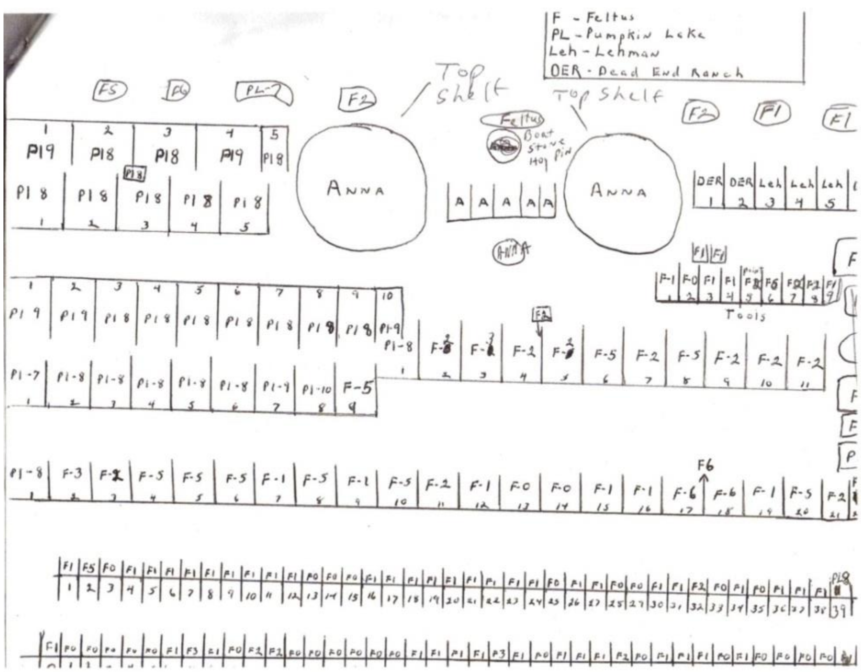


**Figure 1.2: Prospere Diagram 2. This is the diagram Prospere drew from his other display case. Each box in the chart designates a point and its provenience.**

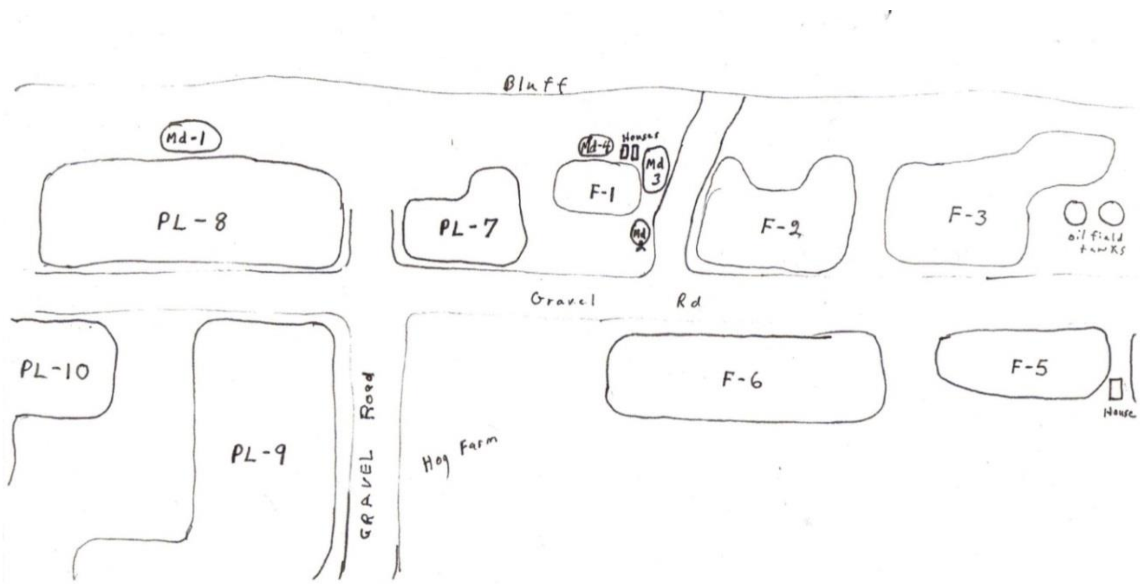


**Figure 1.3: Prospere Map. This is the map Prospere gave me of the fields he collected. The field labels correlate with the labels given in Figure 1.1 and Figure 1.2.**

found. To the east is Field 2, which contains the second largest assemblage, consisting of 102 points. Next to Field 2 is Field 3, which has 66 points; across the road are Field 5, with 35points, and Field 6, which only has 5 points. To the west are the Pumpkin Lake fields. Pumpkin Lake 8 (PL-8 in the diagrams) is the field associated with the Pumpkin Lake mound, which has been only minimally studied. Prospere collected 85 points from this location; the other Pumpkin Lake fields have very few points in comparison. Pumpkin Lake 7 has 7 points, and Pumpkin Lakes 9 and 10, which have become forested since Prospere last collected there, have 19 and 3 points respectively. Prospere did not collect the Hog Farm area per the landowner's request.

With the generous additions of Prospere and Frank's collections to the RLA's assemblages, I have a robust sample of projectile points from the Feltus site and its surrounding fields. The total distribution of these points can be seen in Figure 1.6. Clearly, the greatest assemblages come from the Feltus site proper (Field 1), Field 2, and Pumpkin Lake 8. Feltus and Pumpkin Lake contain mounds, so the wealth of points are easily attributable to these

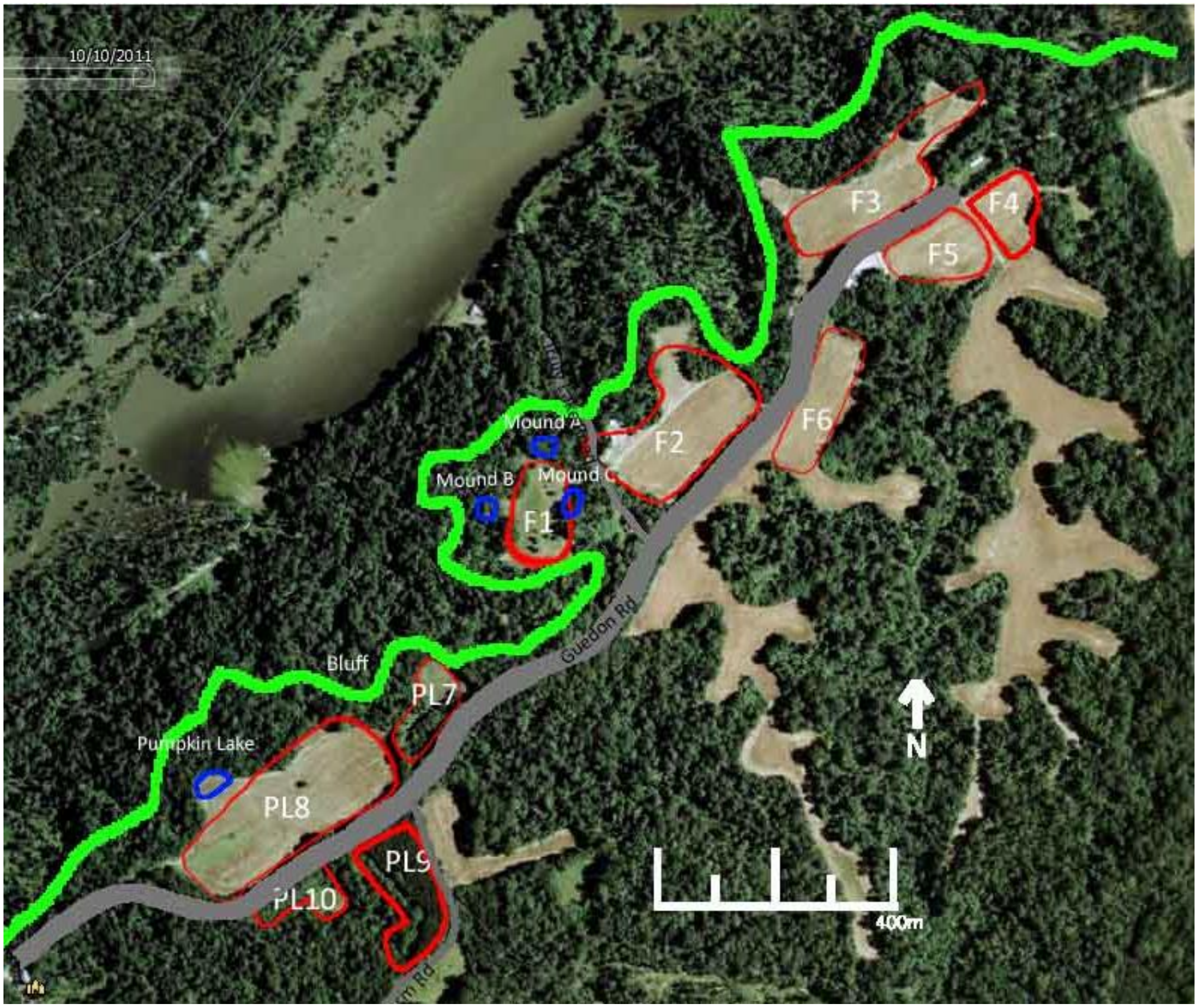


**Figure 1.4: Aerial Map of the Prospere Fields. This is the map of the fields Prospere collected, superimposed on Google Earth imagery.**

archaeological features, while I cannot yet explain Field 2's abundance of points. Of course, each field is subject to sampling bias, so the dearth of points in one field may not reflect the truth of past human activities in these locales.

Although the contexts are not absolutely certain for some of the collected points, the emphasis here is on their morphology. The hope is that conclusions from this morphometric analysis may be applied to assemblages of better-provenienced points, allowing researchers to delve even deeper into discussions of lithic technology.

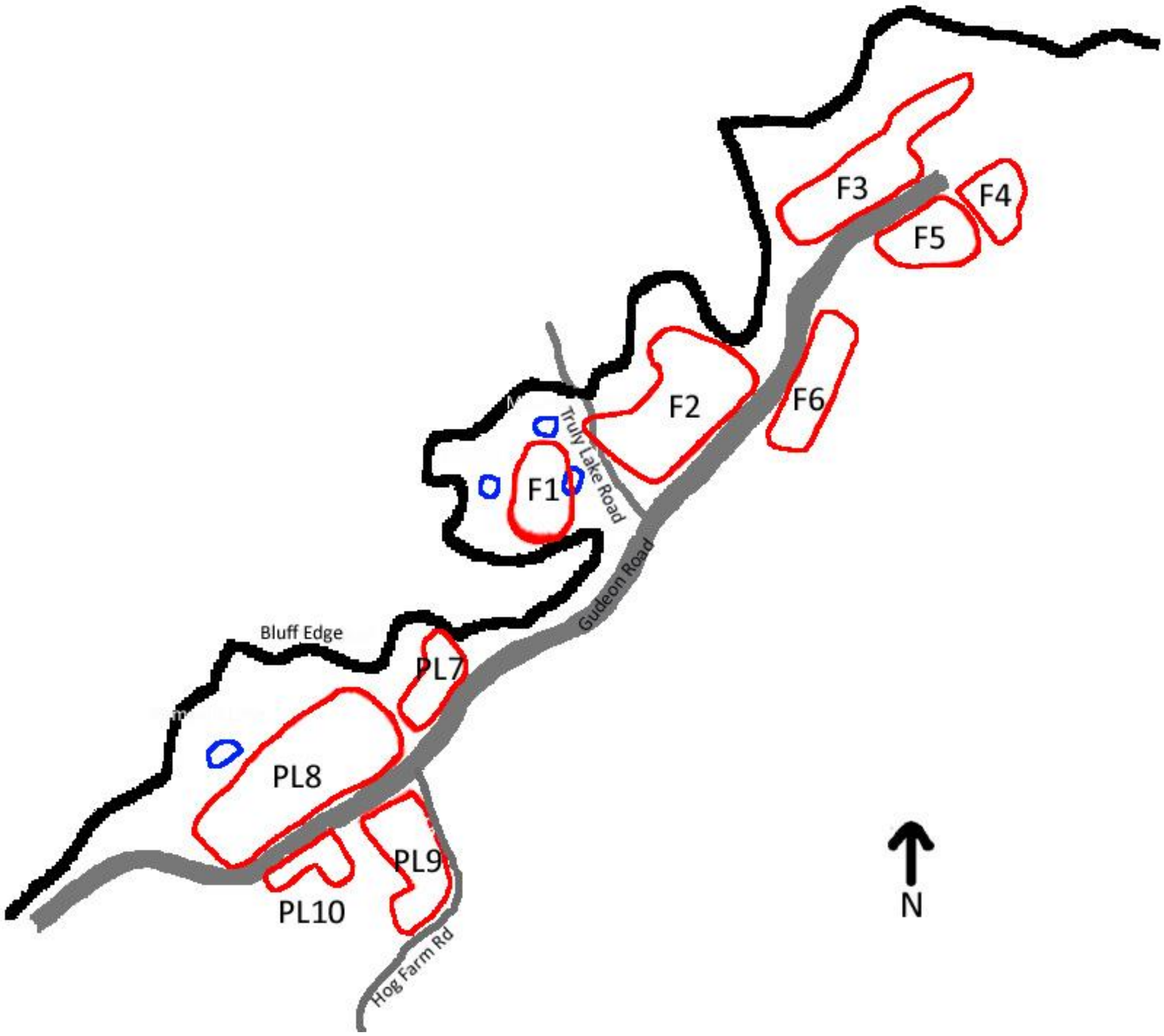


**Figure 1.5: Map of the Prospere Fields. This is the final map of the fields Prospere collected.**

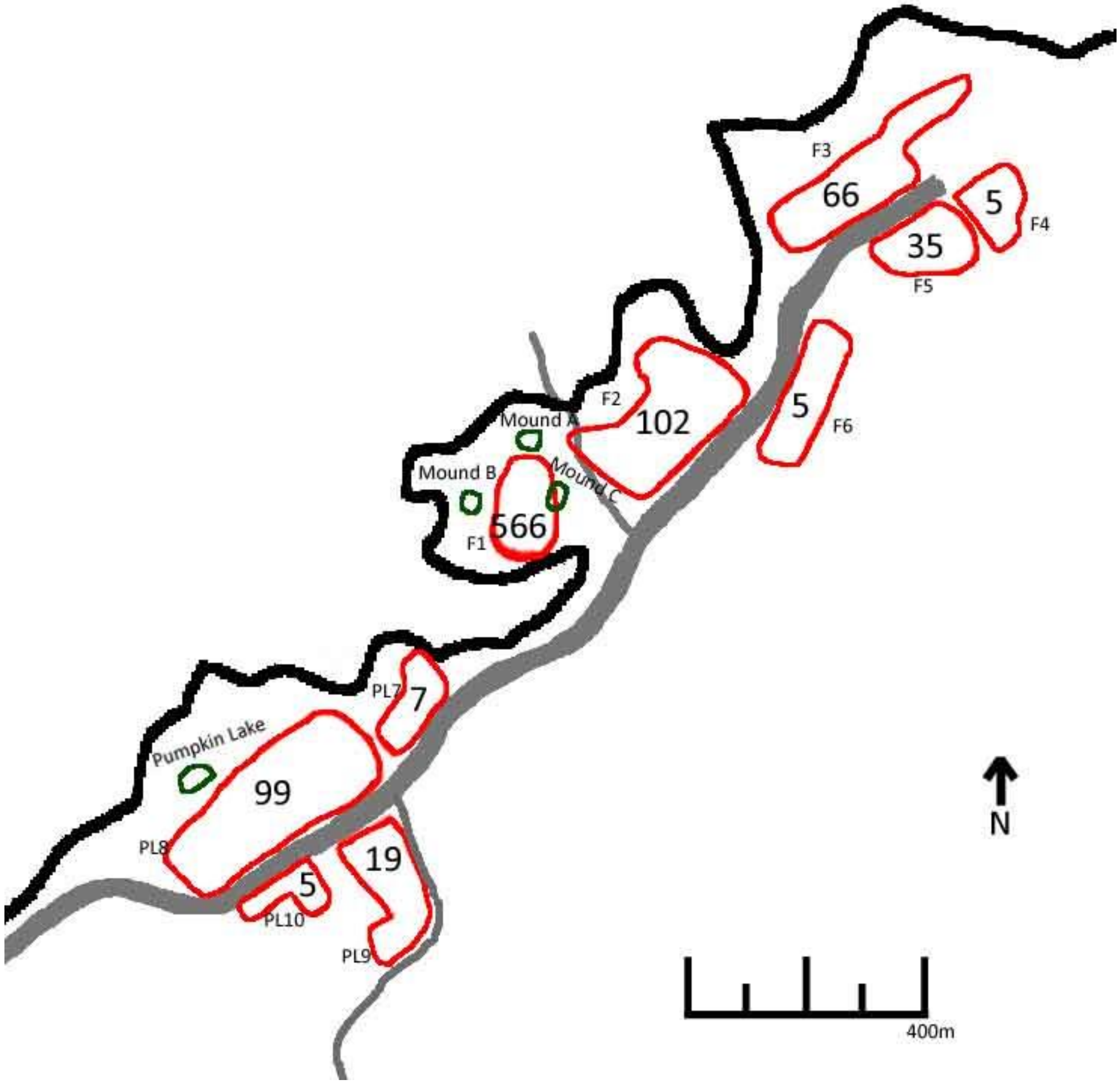


**Figure 1.6: Total Point Distribution. This map shows the total counts of points found in each location.**

# Chapter 2: The Purpose of Types

Before looking into the typology of Feltus points, we must first discuss why we bother creating typologies in the first place. There has been much debate amongst scholars for the past seventy years over this topic, and the jury is still out on determining a definite explanation for why types are necessary. As Andrefsky (1998:197) reminds us, "people do not treat a stone tool as a type, but rather as a piece of stone that can be used to get the job done." With this realization in mind, the purpose of this section is to flesh out different theories of typology in order to determine why typologies are important and what theoretical framework is most useful for studying the Feltus collections.

Despite disagreements amongst researchers, there are a few basic tenets of typology upon which most archaeologists agree. Ford (1954:42) argues that "the basic conceptual tool of cultural research is that of the type." Types, when used properly, should create an organizational system in which each type reflects a specific period, location, or cultural group (Ford 1954; Dunnell 1971). This is certainly a perfect grounding-mechanism for the purpose of types; however, it is not enough to merely use point types as chronological markers in this research because the Feltus site already has some radiocarbon dates and plentiful ceramic analyses (Steponaitis et al. 2012a, in press). Further, the different point types represented in the collections (to be discussed later in this chapter) currently have very broad temporal spans, so their classification does little to help date the Feltus site beyond what we already know. In studying these types, I must look to deeper theoretical framework to make my types useful and meaningful to the overall study of Feltus and its surrounding areas.

The following discussion of types is best viewed through the theoretical lens of style.

Hegmon (1992:518) simply defines style as “a way of doing,” encompassing everything from surface decoration to the process and methods of production. This seemingly simple definition came in the midst of a thirty-year debate as the only point of agreement amongst dissenting researchers. As I review the debate below, I aim to show that the Feltus collection points can be best classified by using a framework that combines the notions of function, morphology, and production.

## Functional Types

One useful way of classifying objects is to organize them based on their function. Steward (1954) and Brew (1946) urge archaeologists to look beyond the surface appearance of artifacts and instead focus on the purpose for which the object was created. In this sense, a point would not be classified by whether it was corner-notched or side-notched, but perhaps based on whether it was used on an arrow or on a spear. As Dunnell (1978) argues, the functions of artifacts shift as people adapt to their changing circumstances. With this reasoning, researchers could create more historically-specific types that are useful in cross-cultural analyses (Steward 1954). Most of the types present in these collections distinguish between spears, darts, and arrowheads, allowing for Steward’s (1954) desired historical markers.

While function certainly seems a most practical way to categorize objects, typological waters could get a bit murky for points with this sort of reasoning. A stone tool can easily be used for multiple purposes, for any projectile point could easily double as a cutting edge. Further, through a point’s life, it can be reshaped and retouched to be transformed into a drill or scraper (Andrefsky 1998). As you can see in Figure 2.1, there are some points in the Feltus collections that were reshaped into other functional tools, although it is difficult to discern some


**Figure 2.1: Points Used for Other Functions. On the left is point F1-55, a Collins point turned into a drill. This point has the general body of a point, but the tip may have been made to be used as a drill, although this type of tip is common for Collins. To the right is point PL9-17, a Gary, *var. Maybon* point turned scraper. This point as the general body of a point, but the tip has been flaked off and rounded so that it could be used as a scraper.**

of these points-turned-drills from some points classified as Collins, *var. Collins* (to be further discussed later).

For these reasons, Meltzer (1981) argues that the best way to distinguish the function of a tool is to look at its use-wear and not its morphology. Further, he proposes we distinguish morphological characteristics that are the result of style from those that reflect the purposes of function. Through his analysis of Lower Columbia points, Meltzer (1981) argues that stylistic morphology changes through time while functional morphology remains static. This idea is slightly contradictory to Dunnell (1978), who proposes that functional shapes will adapt with time, while an artifact's appearance differs among cultural groups. With these kinds of distinctions, some scholars, like Dunnell (1978), argue that style and function are mutually exclusive. Before delving into this issue, let us first take a closer look at style.

## Morphological/Decorative Types

The simplest way to conceive of a type is to organize objects based solely on their appearance. In the 1980s, Wiessner (1983, 1984) and Sackett (1985) began a heated argument over why cultures decorate their objects differently. Starting with Wobst's (1977) idea of style as a cultural message, Wiessner (1983, 1984, 1985) uses ethnographic studies of the Kalahari San's projectile points and beaded headbands to coin the term "emblematic style." In this type of style, people use different surface decorations/morphologies to send messages to target groups, thereby distinguishing cultural groups and demarcating social boundaries. Thus, she argues that style is actively produced by social groups to communicate cultural messages to outsiders. While Wiessner's (1983) study of Kalahari San projectile points cannot delineate regional groups, she argues that the different styles of points do separate linguistic groups.

There are several problems with Wiessner's (1983) argument. Many of the different linguistic groups were not aware of each other's existence, so it is unlikely that they were sending cultural messages to each other (Sackett 1985). Further, Wobst (1977) argues that target groups will neither be too far away nor in close proximity, and it seems that different linguistic groups who did not know of each other's existence would be too far away to be target groups. Nonetheless, if we were to apply Wiessner's (1983, 1984) theories of emblematic style, then types based on different morphological features and social locations could distinguish social groups.

Sackett (1985, 1990) proposes a different view of style that may prove more interesting in light of Feltus research. In his view, people passively create style through isochrestic variation. Simply defined, isochrestic variation is the custom and tradition of making an object in the way that one's relatives and role models did. Hence, this vein of style could show cultural depth and processes, as Sackett (1990) believes isochrestic variation leads to the standardization of a culture since each generation replicates the same methods used by their ancestors.

While many scholars argue that style cannot be passive (Hodder 1990; Richerson and Boyd 2005; Wiessner 1983) there are a couple of interesting aspects of Sackett's (1985, 1990) isochrestic variation that can lead to productive theories of technology and culture. But, before expanding on isochrestic variation, let us first turn our attention to the French tradition of *technologie.*

## Typology as *Technologie*

While Wiessner (1985, 1990) and Sackett (1985, 1990) were locked in their debate over whether style was active or passive, other scholars pressed forward with intriguing interpretations of style. Lemmonier (1986) and Lechtman (1977) argue that archaeologists need to look beyond the mere appearance of an artifact and instead examine the technological processes that went into creating it, called *technologie*. Choices are made at every stage of production, and it is these choices that reflect cultural processes, decision-making, and social ideas. For example, Lechtman (1977) explains that, in the Old World, an artist will simply gild the outside of an object if he/she wants it to appear golden. However, in the Andes, metallurgists will not only make the outside gold but will include gold on the inside so that the essence of the object is the same throughout. Lechtman (1977) argues that these choices made in production reflect differing views of an object's essence. Thus, this analysis shows that technology can reveal aspects of cultures that may never be demonstrated on the surface of an artifact.

Further, Gosselain (1998) offers an example in which a mother taught her two daughters how to make pottery. When the two sisters married and moved to different villages, the pottery they made looked very different on the outside, reflecting their new homes, yet the techniques for creating, firing, and post-firing of the pots were identical, reflecting their shared heritage.

These women are demonstrating Sackett's (1990) isochrestic style while transmitting messages about where the women live in a style akin to Wiessner (1983). Clearly, there is much information that is hidden beneath the outside appearance of an object if only archaeologists look for it.

Because many of these choices in production are so ingrained in a culture, we can apply Sackett's (1990) isochrestic variation to the study of technology in order to understand how a culture continues to make an object in the same tradition as their ancestors. Dietler and Herbich (1998) propose that, through the decisions made at each stage of the *chaîne opératoire*, a group constantly performs its cultural practices. These performances create a *habitus* of production, borrowing from Bourdieu (1977).

While much of the debate over technology and style has centered around pottery, these same theoretical frameworks are applicable to lithic technology. In this sense, one could classify a point based not on its shape but by the techniques used to produce the point. For example, Bradley and Stanford (2006) have argued that Solutreans are Clovis ancestors because both groups appear to share similar manufacture techniques, especially the rare technique of overshot flaking. While their overall argument is likely false (see Strauss et al. 2005), their reasoning shows that there is more to projectile points than just their shape.

## Conclusions

For this research, I aim to combine the above purposes of typology so that the given types represent not only morphological and functional differences but also technological differences in production. Andrefsky (1998) reminds us that lithic technology is a reductive process that allows the shape of a blade to change throughout a point's use-life, and archaeologists study points that were deposited or lost at all stages of this process. I propose that the people at Feltus isochrestically produced and reshaped their points, creating a *habitus* of lithic reduction. The different types then reflect different technological processes as well as shape and use, whereas varieties of these points types may only reflect different stages of the *chaîne opératoire*. This idea will be especially pertinent to the later discussion of Collins points.

## The Reality of Types

Before moving to a discussion of what types are present in the Feltus material, there is one more aspect of typology that needs to be mentioned. Without a doubt, organizing the collections into types is necessary, or else the assemblage of points would be little more than a pile of chaos, as it was when I first began. However, while it is always good to bring order out of chaos, it is important to remember that these categorizations are etic and thus may not reflect any true types but may rather be a "false reality"(Brew 1946:99-100).

Instead of agonizing over whether Feltus peoples would have classified their points like I am about to (disregarding the question of whether they would have classified them at all), my goal is to create a typology that best helps deduce information from the points, using the above-mentioned theoretical framework. It is this ambition that makes types useful (Dunnell 1971; Ford 1954).

# Chapter 3: Types at Feltus

There is no distinct handbook for point types in Southwest Mississippi. Instead, the types listed below come from research around Mississippi, Arkansas, Louisiana, Texas, and even Oklahoma. In fact, the first main building block for point typology in Southwest Mississippi is Suhm and Krieger's (1954) *An Introductory Handbook of Texas Archaeology*. In this book, which encompasses almost every aspect of archaeological study, they laid the foundations for the majority of point types still used today.

Four years later, Robert E. Bell (1958) published a series of bulletins through the Oklahoma Anthropological Society. These handbooks are straightforward guides that draw heavily on Suhm and Krieger (1954), although it includes a wider breath of point types.

In 1981, Clarence H. Webb published a bulletin similar to Bell's (1958) through the Louisiana Archaeological Society entitled *Stone Points and Tools of Northwestern Louisiana*. While this book is similar to previous bulletins, Webb (1981) is not as thorough in his descriptions, with minimal pictures of each type, and he does not reference his sources for each type like Bell (1958) and Suhm and Kreiger (1954) do. Further, some of the type descriptions differ from these earlier works, which may demonstrate taxonomic improvements or simply regional differences. Nevertheless, many of Webb's (1981) types seem outdated while Suhm and Krieger's (1958) work is classic.

For thirty years, following Suhm and Krieger's (1954) publication, typology remained relatively static in Mississippi. This ended when Williams and Brain (1983) published their study of the Lake George site. In this book, they attempt to reorganize point types into a type-variety system like the well-established Mississippi system of ceramics. Many scholars immediately dismiss their varieties, while others find utility in them. Much of the following discussion consists of dismantling or supporting Williams and Brain's (1983) reforms.

A couple of point types in this collection are described in Frank Schambach's (1998) *Pre-Caddoan Cultures in the Trans-Mississippi South*. This book, which compares ceramic and lithic assemblages at several pre-Caddoan sites, offers very detailed explanations and discussions of each point type. Further, Schambach (1998) follows in Williams and Brain's (1983) tradition by using a type-variety system. However, I do not draw heavily on this literature, so I have not closely analyzed these varieties.

The most recent and popular book on Mississippi types is McGahey's (2000) *Mississippi Projectile Point Guide*, published thirteen years ago. Here, McGahey (2000) largely dismisses Williams and Brain's (1983) classificatory scheme with only a few exceptions. Overall, this book is likely the best synthesis of point types for the area, and it serves as the background for my research.

As shown, the literature on Mississippi point types is scant, and the few handbooks we do have present sometimes contradictory or ambiguous types. Clearly, more research needs to be done on points in this area. It is my aim throughout this chapter to shed light on some issues in current typologies and offer some possible solutions.

## Types Present in the Collections

The combined collections of Prospere, Frank, and the RLA yield a very diverse assemblage of points spanning from the Paleoindian to the Late Woodland Period. The vast majority of Woodland points were found in Field 1, the Feltus site proper. Most of the Archaic points were found in Field 2 and Pumpkin Lake 8 while the few Paleoindian points are evenly distributed. The following is a brief description of the majority of types present in this collection.  Full descriptions, definitions of terminology, and pictures of the point types can be found in Appendix A.

## Paleoindian Types

For the two oldest, lanceolate Paleoindian points, there is one Arkabutla with a concave base and wide tip, from Pumpkin Late 8 and one Plainview, also with a concave base but with slightly contracting sides, from Pumpkin Lake 10 (Figure 3.1).  While they do not neatly fit into a type, there are two other lanceolate points that may fit well into this time period because of their basic morphology.  They are small and generally round with concave and thinned bases.  I have created a tentative Group A for these two points, but I do not include them in the distributional map in Figure 3.2.  (I discuss my tentative groups in more detail below.)  There are also a few Dalton and San Patrice (*varieties Leaf River* and *St. Johns*) points, which are evenly distributed across the fields.  The presence of these types suggests Paleoindian activity in this area.

## Middle Archaic Types

Moving to the Early Archaic, people began to fashion points with stems, moving away from the lanceolate shape.  However, there are no Early Archaic points present in these collections, so we shall skip to the Middle Archaic (Figure 3.3).  This period is largely represented by the 73 St. Tammany points in this collection.  It is worth noting that McGahey (2000) dates these points to circa 4,500-3,000 BC, which is on the cusp between the Middle and Late Archaic; however, he groups St. Tammanys with the Middle Archaic, so I shall follow suit.

St. Tammanys are distinguished by long parallel sides that are strongly serrated.  Their most diagnostic feature is the so-called screwdriver tip, where the parallel sides suddenly stop and abruptly come to a point (Brookes *et al.*, 2011; McGahey 2000).  Among these points, I have

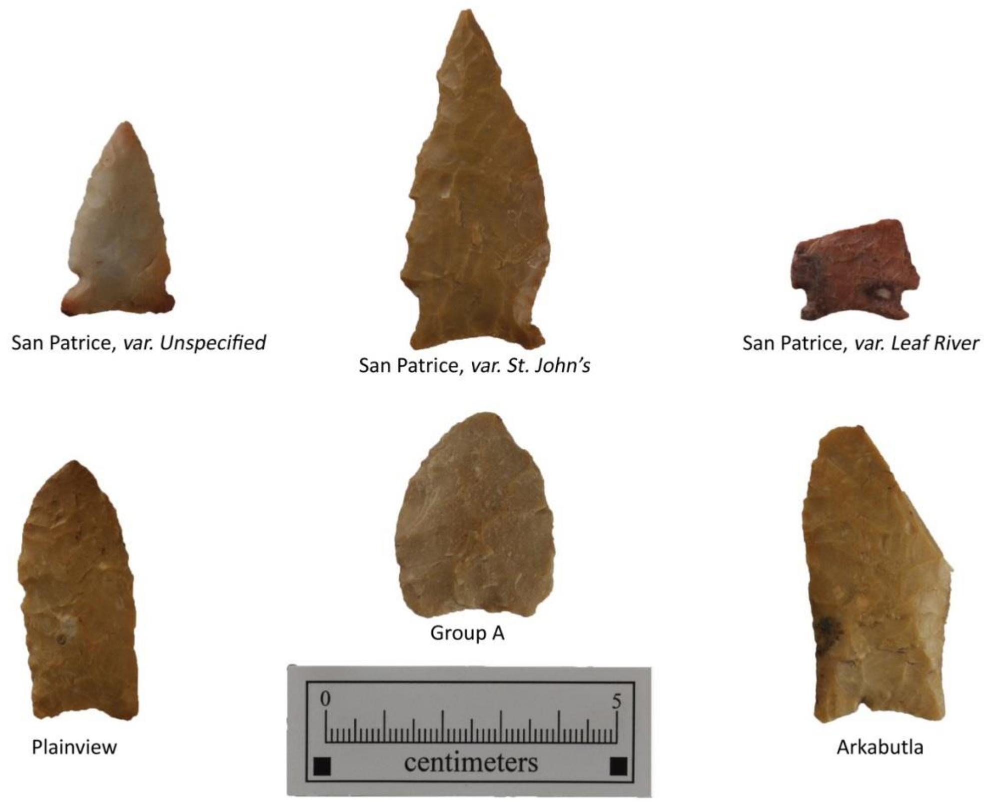


**Figure 3.1: Paleoindian Point Types.**

found six different varieties of stems, including wide stem with a straight base, narrow stem with a straight base, expanding stem with a straight base, bifurcate base, and rounded base, with the majority having a wide, square stem. Currently, I do not know if these stems reflect anything more significant than different styles of manufacture, and further research will be needed, especially since most archaeologists feel uncomfortable defining a point by its blade and not its base.

Aside from St. Tammany points, there are 13 Opossum Bayou and Cypress Creek points. These points have triangular to rounded blades and are slightly corner-notched with roughly expanding stems. The main difference between these types is that Opossum Bayou is thick and crude with a convex base while Cypress Creek points are relatively thin and have a straight base. McGahey (2000) divides Cypress Creek into two varieties based mostly on size. This distinction

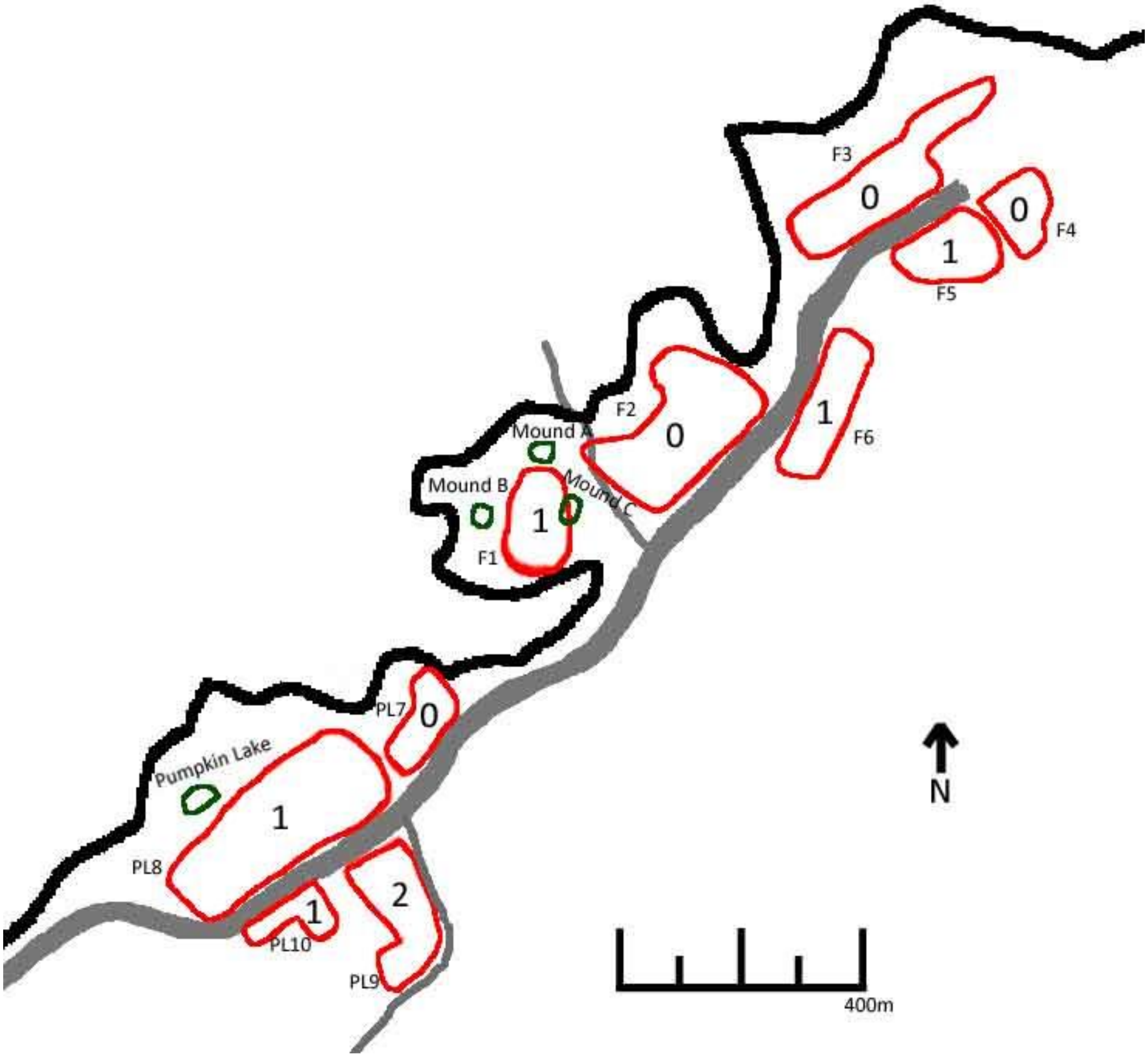


**Figure 3.2: Distribution of Paleoindian Points. This map shows the distribution of Arkabutla, Dalton, San Patrice, and Plainview points.**

is not apparent in the Feltus collections. Further, I am not overly confident in the division between Opossum Bayou and Cypress Creek points because it seems slightly arbitrary.

Finally, there is one Benton point made out of its characteristic Fort Payne Chert (Johnson and Brookes 1989; McGahey 2000). Johnson and Brookes (1989) discuss how these points were part of a large exchange network across the Southeast, called the Benton Interaction Sphere, so the presence of this point may be telling of larger cultural complexes.


**Figure 3.3: Middle Archaic Point Types.**

There is clearly a strong presence of Middle Archaic points around the Feltus site, mostly concentrated in Field 2 (Figure 3.4). At the moment, little is known about this field, but these points suggest that there may be a Middle Archaic component in this locale. This is particularly interesting because the Pumpkin Lake mound and Bates Mounds 1 and 2 have not yet been well investigated, so these points may suggest the possibility that these mounds date to the Middle Archaic period

## Late Archaic through Middle Woodland Types

Moving forward in time, there is a large collection of Late Archaic points (Figure 3.5). Two of the most intricate types during this time period are Pontchartrain and Smithsonia. Both of these types are finely serrated and manufactured with long, neat flake scars across the blades.

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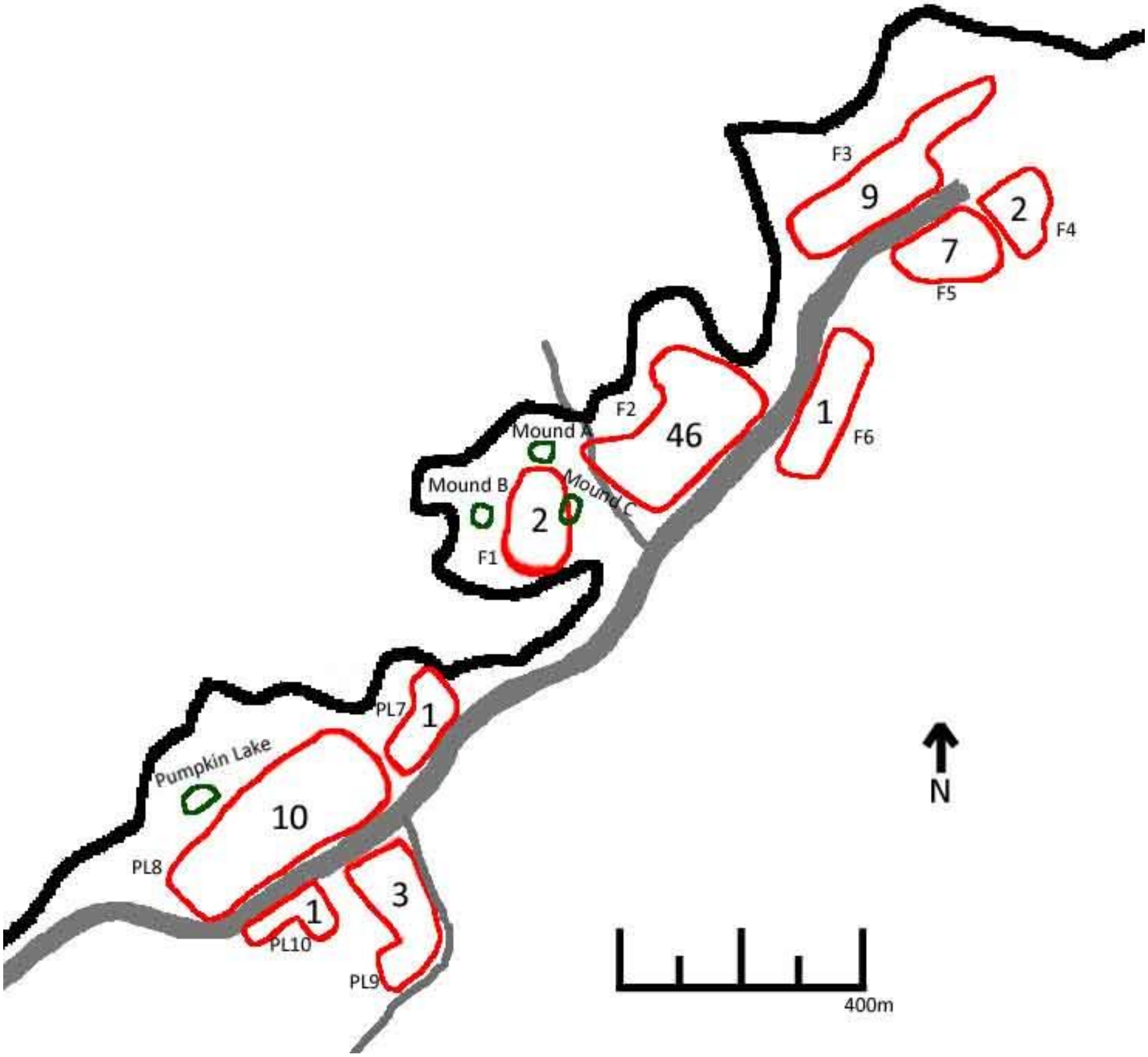



**Figure 3.4: Distribution of Middle Archaic Points. This map shows the distribution of Benton, Cypress Creek, Opossum Bayou, and St. Tammany points.**

Pontchartrain is far thicker than Smithsonia and has a more ovate blade (McGahey 2000; Webb 1981; Williams and Brain 1983).

Another prevalent Late Archaic point is Delhi, a large point with an extended blade and distinctive barbs. The long stems and base are relatively straight (McGahey 2000; Webb 1981). Interestingly, Prospere found the two pieces of a broken Delhi point in Field 5 on separate

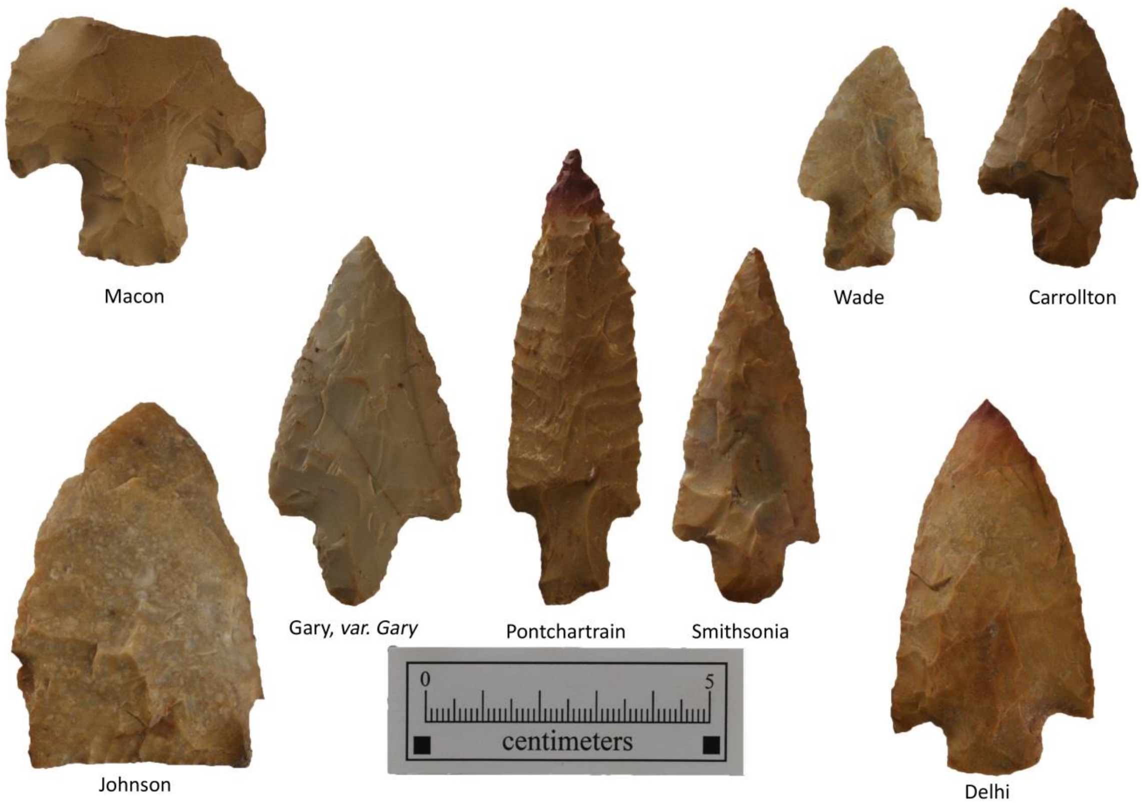



**Figure 3.5: Late Archaic Point Types.**

occasions. The broken ends were heavily smoothed, likely from modern field plowing (Figure 3.6).

There are a few Gary points, which are larger points with distinct, contracting stems that come to a point. Gary, *var. Gary* points are rather crude and have generally square shoulders, while Gary, *var.* M*alvern* points have very narrow and poorly-defined shoulders. Both are distinguished from the Woodland Gary, *var. Maybon* variety by their large size (McGahey 2000; Shambach 1998; Williams and Brain 1983). However, it seems that Gary, *var. Malvern* could be easily confused with a poorly-made Gary, *var.* M*aybon* point.

Finally, there are a few Carrollton points. This type description is not present in McGahey and may need refinement, but the general shape is a symmetric triangular blade with


**Figure 3.6: Delhi Point Found in Two Pieces. The bottom half is F5-15, and the top half is F5-24.**

square shoulders and a straight stem (Bell 1958; Webb 1981). It is possible that Carrolltons are merely resharpened Delhi or Wade points.

Moving towards the Middle Woodland, there are many Gary, *var* M*aybon* points. These points have blades that are extended triangular and the shoulders that are sloping. Like their *Malvern* and *Gary* cousins, they have contracting stems. The degree to which the stems contract is a manner of debate, however, as the points shown in Williams and Brain (1983:232-233) are not exceptionally acute, unlike those shown in McGahey (2000:193). Because of this confusion amongst scholars and the apparent lack of workmanship exemplified in many of these points classification of this type is difficult. Some of the points described below in the Kent/Edwards Stemmed conundrum may in fact belong in the Gary, *var Maybon* type, depending on how contracting the stem needs to be.

Aside from these above-mentioned types, there is one example each of Macon and Wade points and a few examples of Johnson points, as described in Appendix A. The only other Late Archaic and Woodland points are Kent and Edwards, as described below.

***Kent and Edwards Stemmed Points***

The above-listed Middle and Late Archaic types represent the end of my confidence. We now turn our attention to the 77 potential Middle Archaic to Middle Woodland points of indeterminate type. Most of these points could be easily classified as Kent or Edwards Stemmed, but, in the literature, the two definitions are nearly indistinguishable except that they are chronologically set apart by about one thousand years.

The Kent type was originally described by Suhm and Krieger (1954) and has appeared in almost every source used for this research. In my most recent source, McGahey (2000) classifies Kent points as

> a relatively narrow, thick point with straight, concave or convex edges. Stems are usually square with straight bases . . . Cortex remnants are frequently observed on these points. (p.163)

He dates these points to the Late Archaic. Likewise, McGahey (2000) describes Edwards Stemmed points as

> medium-sized, relatively narrow points with straight stems and generally straight bases. They frequently have cortex remnants on basal edges and occasionally on one or both faces . . . Blade edges are straight to slightly convex. Distal ends are usually acute. (p.194)

McGahey (2000) places these points in the Middle Woodland.

Both Kent and Edwards Stemmed points are narrow with straight stems and bases, and there are often cortex remnants on the bases and/or blades. Even with the pictures in McGahey (2000), these types are almost indistinguishable.

McGahey (2000) does suggest that Kents may be an early stage of the Pontchartrain type, but none, or very few, of the Kent/Edwards Stemmed points have stems resembling the carefully-manufactured Pontchartrains. This fact could indicate that these points belong in the Edwards Stemmed classification.

To complicate matters further, Williams and Brain (1983), in their quest to create a type-variety system for projectile points, divide the Edwards Stemmed type into varieties *Enola* and *Sunflower*, with *Enola* points being narrower and less extended than the *Sunflower* variety. The varieties are also separated chronologically, as they erroneously place Edwards Stemmed, *var. Sunflower* in the Mississippian period (Williams and Brain 1983; Vin Steponaitis, personal communication 2011). Just as I am not sure how to handle the division between Kent and Edwards Stemmed, I am just as befuddled by this variety distinction.

Because these points are associated with the Pontchartrain and Smithsonia types, it would make sense that they fall into the Kent type, since they all date to about 1,500-550 BC. However, this collection has such an expansive chronological dimension that I cannot comfortably make this assumption. Instead of fabricating divisions between Kent and Edwards Stemmed points, I have created my own temporary types, discussed below.

### *Temporary Groupings*

In order to classify some of these points into reasonable groups, I had to dispense with some types and create temporary categories, which I call "groups" (Figure 3.7). These groups are based on morphological characteristics and overall quality. The main goal is to present the points in meaningful groups, which may prove useful in future research. An underlying issue here is that the vast majority of these questionable points are not well manufactured, so the distinction between and square and rounded stem is not as clear-cut as it should be. Because Group A is described above with the Paleoindian types, the following discussion will begin with

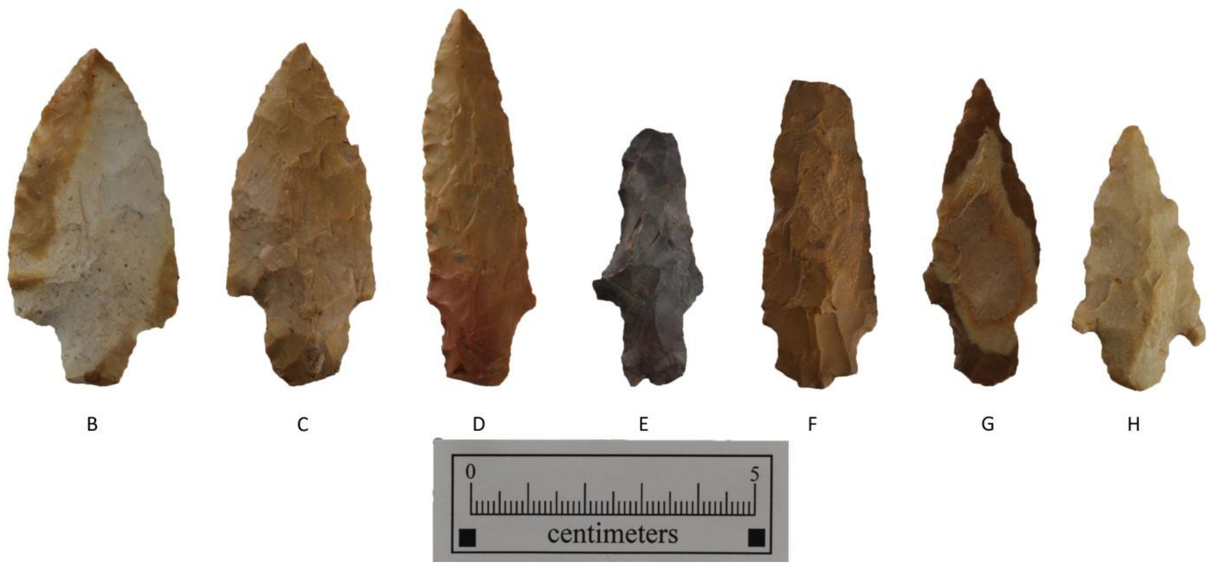



**Figure 3.7: Group Points.**

Group B.

Group B includes medium-sized points with a triangular, slightly excurvate blade. The shoulders are square and slightly barbed. The distinguishing characteristic is the contracting stem and straight base, and it is very well made. There is strong resemblance between this type and the ceremonial Wolf Lake type, as described in McGahey (2000) except that Wolf Lake points are exceptionally larger than the Group B ones.

Turning to cruder points, Group C may be the closest analog to the Kent type. These points share the same square stems and straight bases as Kent points. Conversely, Group G points are the closest to what may be classified as Edwards Stemmed (no variety). The main difference between Group C and Group G are that C points are far more robust. The stems are wider and overall thicker than Group G points. My intuition would say that this robustness would put Group C, like Kent points, in the Late Archaic, while Group G points, like Edwards Stemmed, date to the Woodland period. However, intuition is not enough to make any solid claim, so I will withhold any chronological statements. Further, none of these points are counted in the distributional maps.

Group D points are related to Group C points in that they are both thick and robust. However, D points are very narrow with short shoulders and long, square stems. The blades are extended, thick, and show attempts of longitudinal flaking. For this reason, these points resemble crude Pontchartrain points, as if they are resharpened Pontchartrains or were created by an amateur knapper. Or, rather, it could be that Pontchartrain points were only produced by the most highly-skilled manufacturers.

An even cruder version of Group D are the Group E points. These are very small, narrow, and thick points. The shoulders are small and stems square. There is rough retouch and perhaps attempts at serrations along the blades. These points may have been manufactured by an amateur or child.

Group F points are thin with a very rounded in appearance. The stem is wide with narrow shoulders, and the base is rounded, with or without cortex. The blade is ovate often with wide, latitudinal flaking.

As already stated, Group G points are delicate and resemble what would likely be classified as an Edwards Stemmed point. Similar to this group is Group H except that, unlike Group G, Group H is corner-notched and often exhibits crude retouch and/or serrations along the blade.

Finally, Group I points are very wide and flat. The stem is wide and slightly contracting. The shoulders are also wide and have faint barbs. These points could also be easily compared to Group G.

While these groups are only tentative, they may prove useful if only to acknowledge the great variation in the collection. As already noted in many of the group descriptions, the vast majority of these points are exceptionally crude and may be ambiguously put into the Kent, Edwards Stemmed, Gary, *var. Maybon* types, or the Ledbetter type- not described above because it seems to be a useless category; for more, see McGahey (2000:141). Perhaps the producers were unskilled amateurs or children, or it could be that most knappers were simply not perfectionists. A reasonable conclusion is that the people who made these points did not seem to care very much about whether a stem was straight or square or chunky or thin. They created a point to "get the job done" (Andrefsky 1998), and, thus, these points are exceptionally difficult to classify.

### *Distribution of Late Archaic Through Middle Woodland Points*

Because of the confusion described above, I cannot create a definitive distributional map of Late Archaic and Middle Woodland Points. Instead, I have divided the points into several maps.

For the Late Archaic point types that I classified with a high degree of certainty (Carollton, Pontchartrain, Smithsonia, etc.), there is no dense concentration of these points in any particular field (Figure 3.8). Field 5 actually carries the largest number of these points with a total of 9.

As for Early Woodland points, there are only the two Gary, *var. Malvern* points, one from Field 2 and the other from Pumpkin Lake 8 (Figure 3.9). As already noted, this is likely an ambiguous type regardless, so this distribution is less than helpful.

The Middle Woodland distribution is only slightly more useful (Figure 3.10). The only type listed in this distribution is Gary *var. Maybon*, but, like Gary, *var. Malvern*, this type could be a catch-all for crude points with contracting stems. Nevertheless, these points mostly cluster in Pumpkin Lake 8.

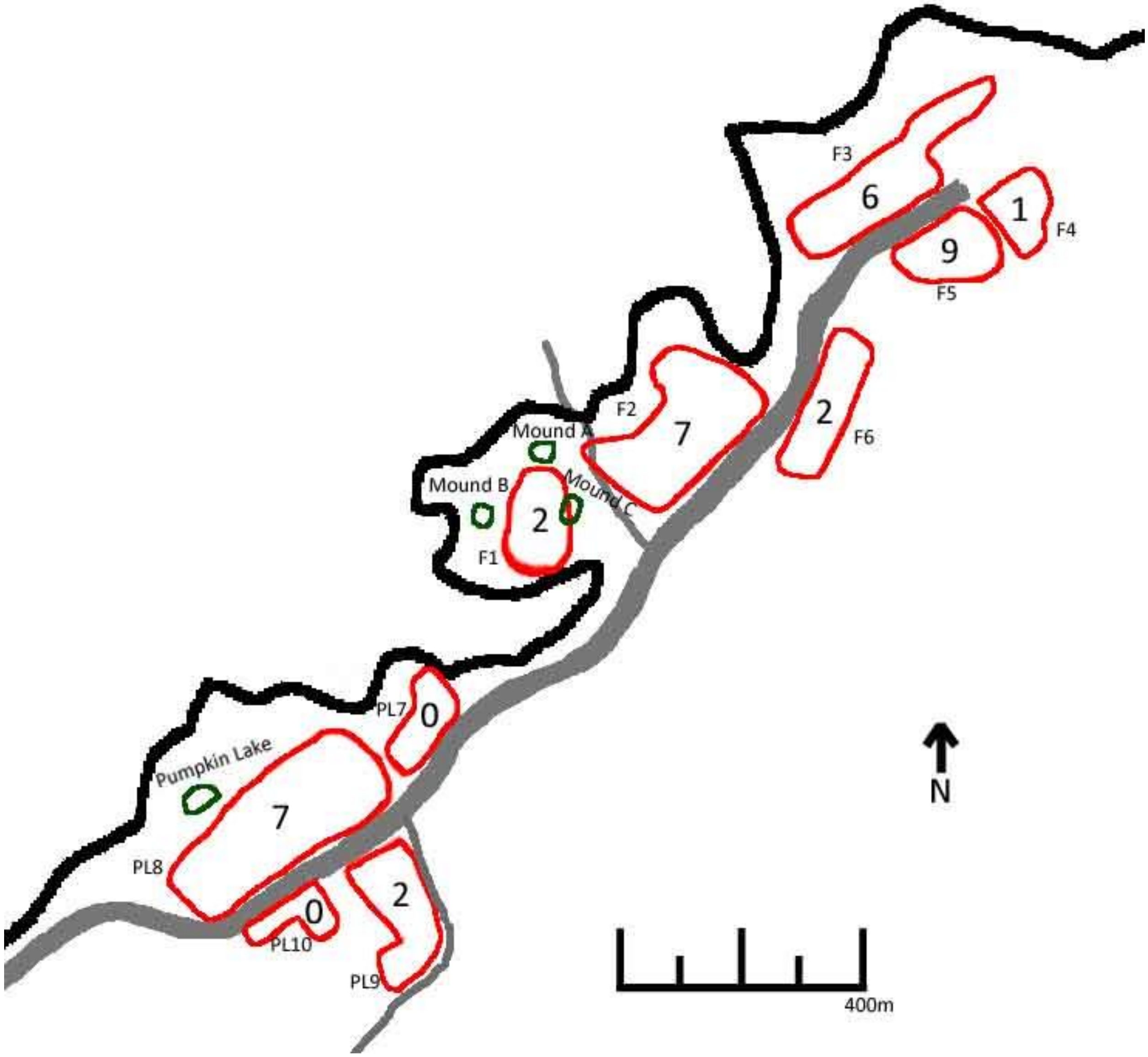



**Figure 3.8: Distribution of Late Archaic Points. This map shows the distribution of Carrollton, Delhi, Gary, *var.* Gary, Johnson, Macon, Pontchartrain, Smithsonia, and Wade points.**

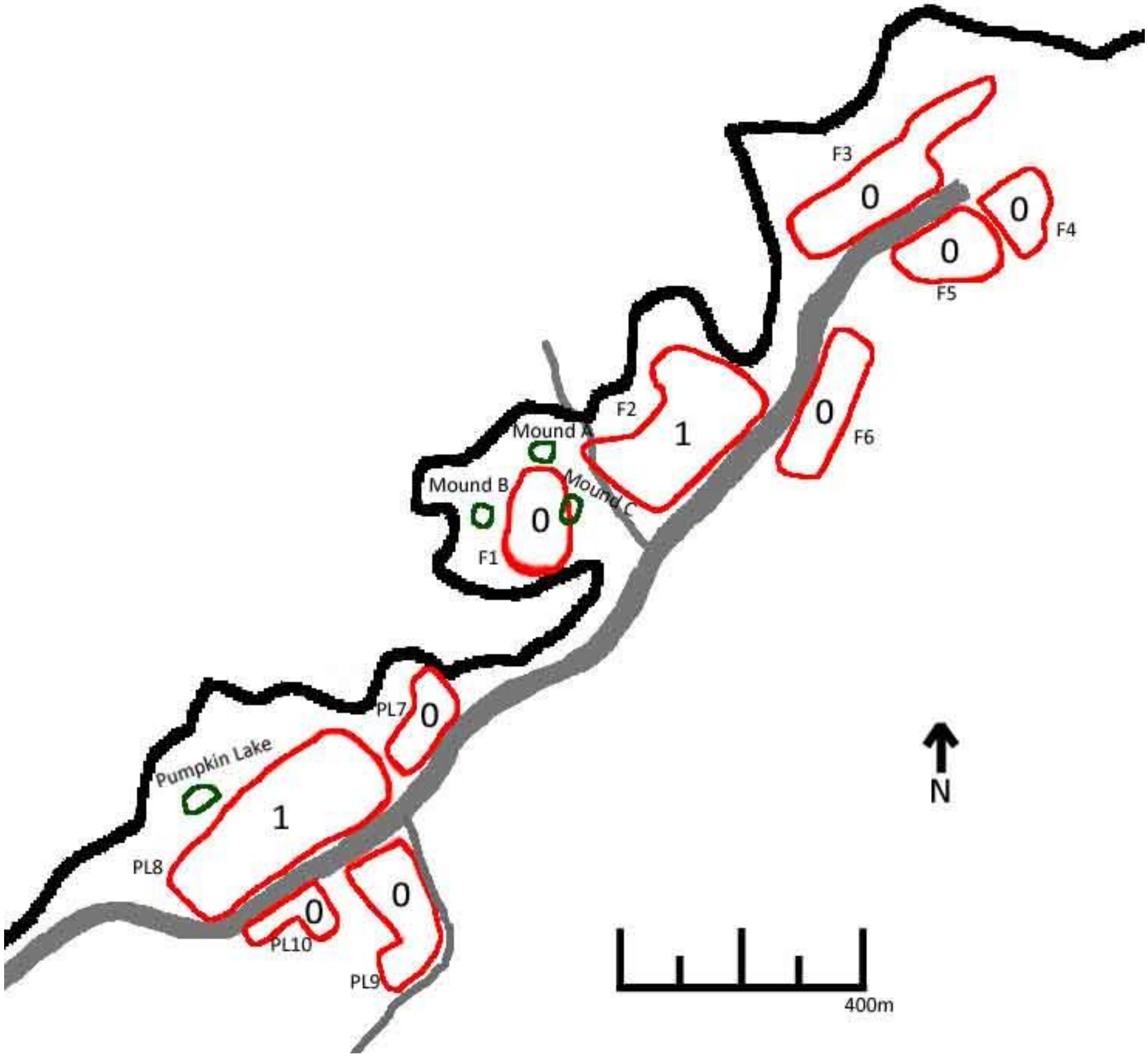



**Figure 3.9: Distribution of Early Woodland Points. This map shows the distribution of Gary *var. Malvern* points.**

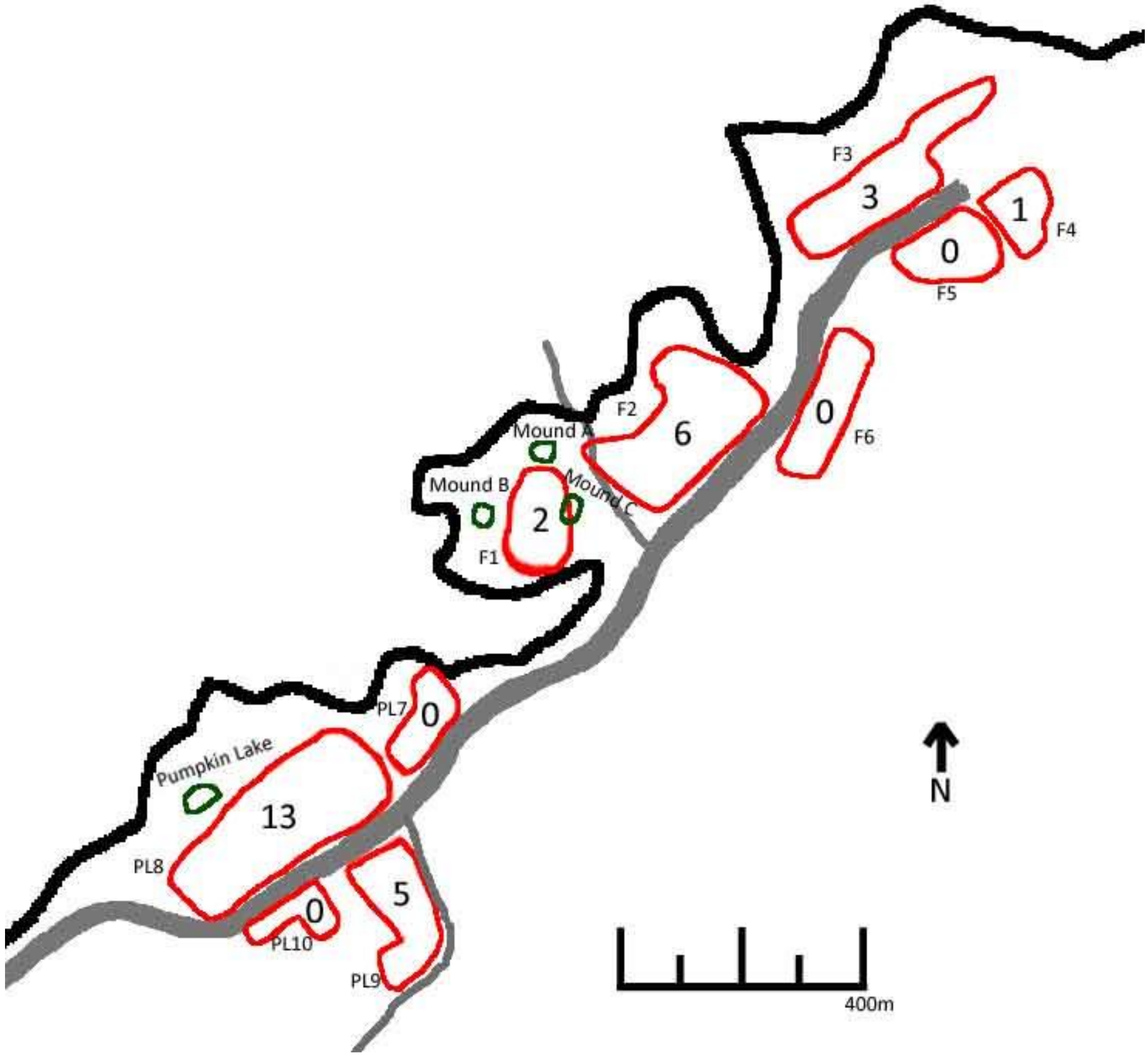



**Figure 3.10: Distribution of Middle Woodland Points. This map shows the distribution of Gary, *var. Maybon* points.**

However, these numbers are probably meaningless without the 77 grouped points. Looking at this distribution (Figure 3.11), PL8 has more than twice the number of any other field. This is especially interesting because PL8 contains the Pumpkin Lake Mound. If these points prove to date to the Late Archaic, then this may suggest that the mound is Archaic. Conversely, if the points actually date to the Woodland period, then the Pumpkin Lake Mound means something entirely different. Perhaps future excavations at this site may help answer this

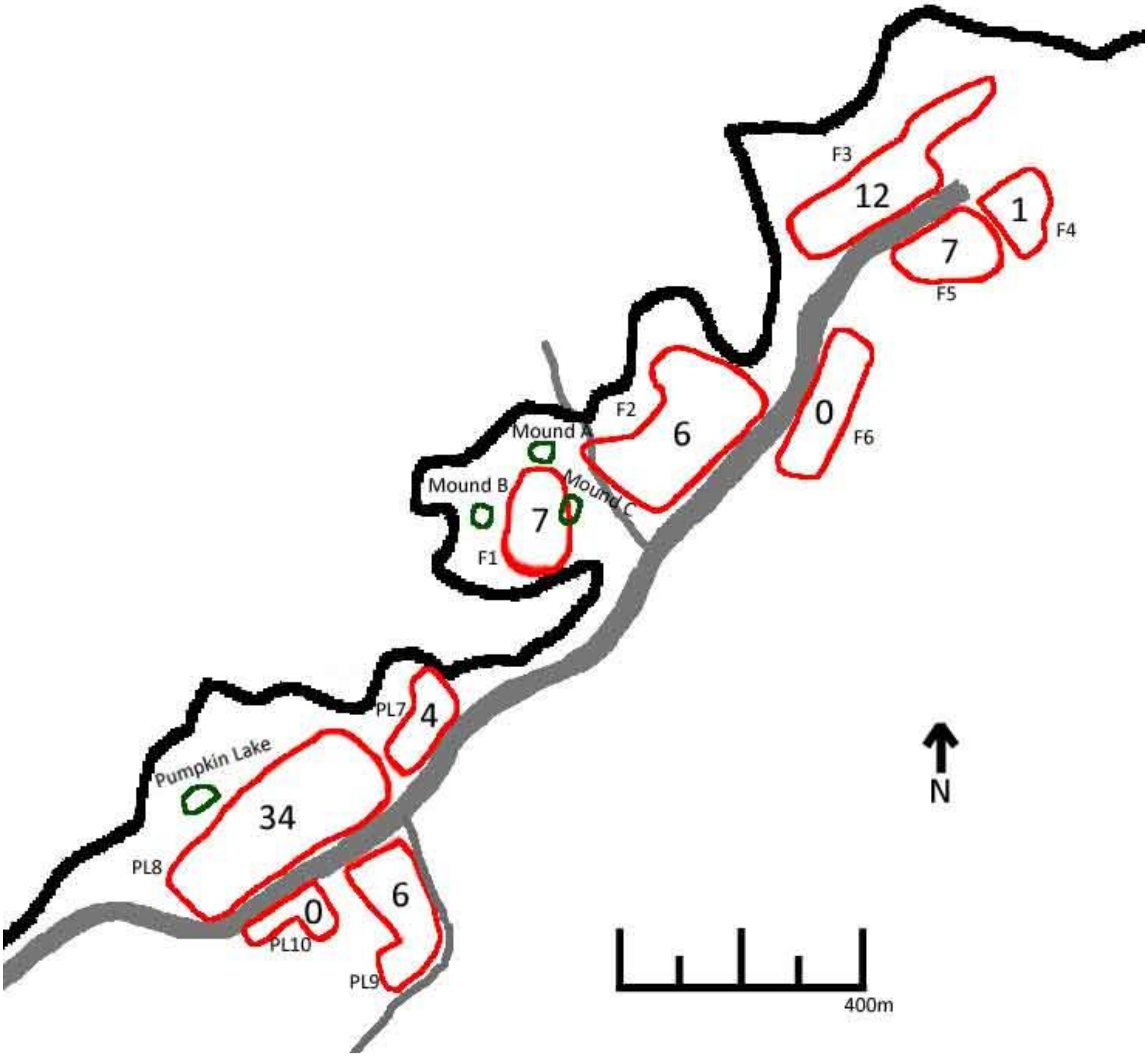



**Figure 3.11: Distribution of Grouped Points. This map shows the distribution of points in Groups B-I.**

question.

## Late Woodland Types

While there are many Archaic points, the vast majority of this collection is from the Woodland period. As the use of bows and arrows became popular, chipped stone arrow points became smaller in size. Nearly all of these points come from the Feltus site proper, which is to be expected given the site's date. There are two main distinguishing characteristics of these points: namely, whether they are corner-notched or side-notched.

***Corner-Notched Types***

By far, there are fewer corner-notched points than side-notched ones in this collection, but the predominant corner-notched ones consist of the Alba, Scallorn, and Colbert types (Figure 3.12). Like the Archaic/Woodland types described above, scholars have given these types ambiguous and overlapping definitions. The Alba type is a good example of this. While most agree that the blade is triangular, the stem is up for debate. Bell (1958:8) writes that Alba stems vary "from parallel-edges to bulbous and fan shaped," a definition in line with Williams and Brain (1983). However, Webb (1981) notes that Alba's characteristic feature is its rectangular base. Webb (1981) calls bulbous-stemmed corner-notched points Colbert. In this debate, I have decided to be a splitter so that only rectangular-stemmed points are Albas, while those with more rounded bases are Colberts. Finally, Bell (1958), Webb (1981), and Williams and Brain (1983) argue that Albas have sharp barbs. I disagree with this definition as it blurs the line between Scallorn and Alba points, a dilemma that will be discussed at length later.

Scallorn points are very closely related to Albas in that they are both corner-notched and

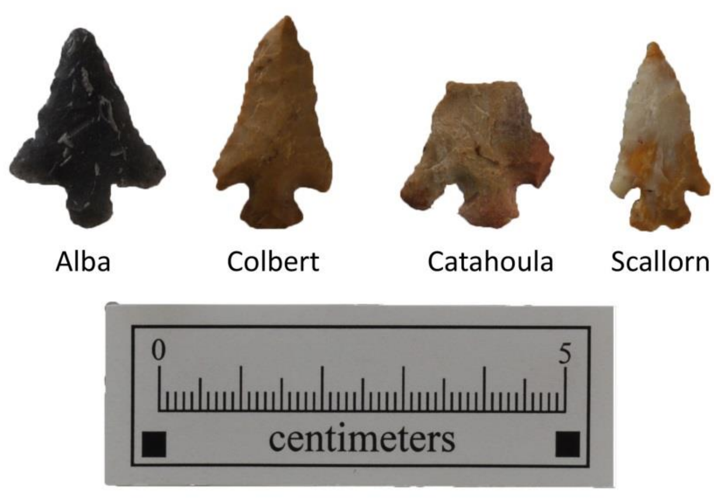



**Figure 3.12: Corner-Notched Late Woodland Types.**

both poorly defined.  Williams and Brain (1983), in their typologies, make Scallorn a variety of the Alba type so that all Alba, *var. Alba* points have bulbous or straight stems and strong barbs while Alba, *var. Scallorn* have expanding stems and straight bases.  I believe there are more fundamental differences between Alba and Scallorn points than this scheme allows.  Thus, I am following McGahey (2000) and Webb (1981) in classifying Scallorn as its own type.  In my classifications, Scallorn points are corner-notched, barbed, and have expanding stems.   They are often incredibly well made (McGahey 2000; Webb 1981), and some examples have a small notch in the base, like the Scallorn in Figure 3.12.  For an explanation of these notches, see Chapter 4.

Catahoula points are similar to Scallorn points because they both have barbs and expanding stems.  The main difference is that Catahoulas have much larger blades relative to their stems as compared with Scallorns.  As a result, Catahoula barbs extend the length of the base (Webb 1981), while Scallorn barbs only reach about half-way down the stem.  That being said, it may be the case that Scallorn's short barbs may simply be the product of a resharpened Catahoula.  Unfortunately, every Catahoula point in this collection is broken, so I cannot be positive about this identification and, worse yet, they cannot be used in the statistical analysis described in the next chapter.

***Side-Notched Types***

Side-notched types make up the majority of this collection (Figure 3.13).  The easiest to classify amongst these points is the Bayougoula Fishtailed.  As the name implies, these points resemble awkward fish.  The shoulders are exceptionally high so that the stem angles in drastically towards the skinny middle where it is notched, creating a V-shape.  Past the notching, the stem suddenly flips out, forming strong ears and notched base (Brookes, personal communication 2010; McGahey 2000).  Despite its seemingly complex description, this type is

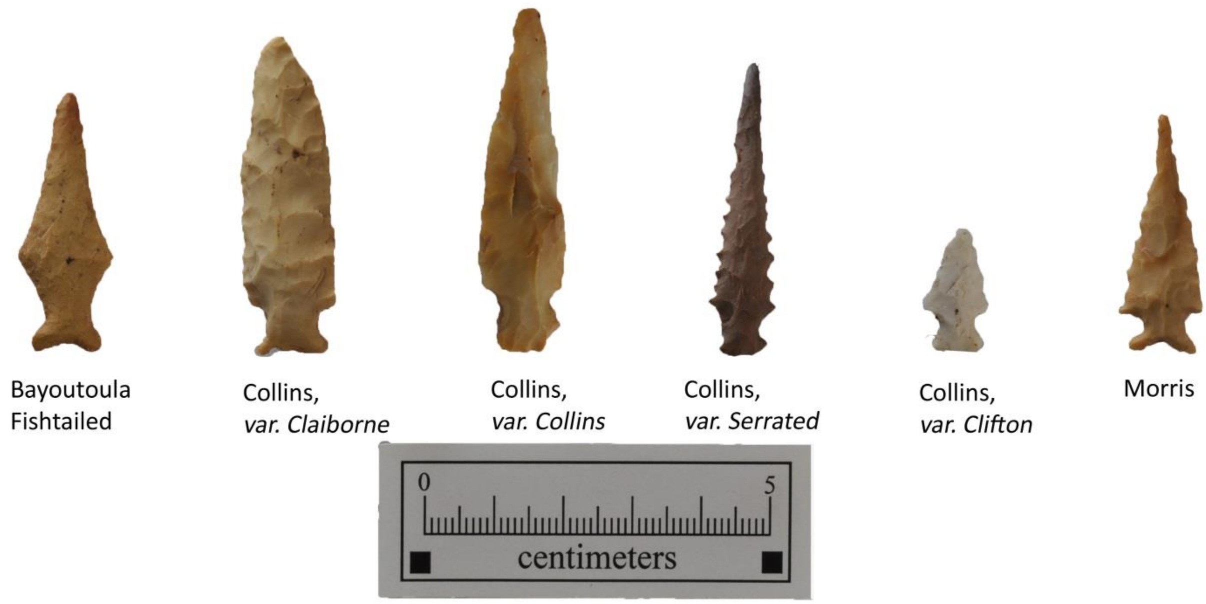



**Figure 3.13: Side-Notched Late Woodland Types.**

one of the simplest to identify and is one of the few types in this collection that poses no issues

We now turn our attention to the Collins points, which make up over one third of the collection. All but ten of these points were found in Field 1 and may prove to be the characteristic point of Feltus.

In general, Collins points are small, side-notched arrowheads with roughly straight bases and long, extended triangular blades (McGahey 2000; Williams & Brain 1983). These points can often be identified by their method of reduction because, unlike most points, the manufacturer removes flakes around the outer edge of the blade first, working towards the middle (Brookes, personal communication 2010; McGahey 2000). Unfinished pieces may have thin edges and a very thick middle as a result.

The problem with Collins points is that their blades show three distinctive types of variation, with some being very skinny, some ovate, and some short triangles. Because of this, Williams and Brain (1983) divide Collins into three varieties: *Collins*, *Claiborne*, and *Clifton*.

Collins, *var* C*ollins* have long, extended triangular blades. These blades typically come to very long, narrow, “needle-like” tips, making these points distinguishable by the tip alone (Brookes, personal communication; Williams and Brain 1983).

In the *Claiborne* variety, the blades are parallel from the shoulders to the midpoint. From this midpoint, the edges turn ovate and form a wide tip. Generally, these points are more robust than their *Collins* counterparts since the tips are not so easily broken.

The third variety, *Clifton*, is much smaller and, according to Williams and Brain (1983), typically made out of exotic material. Instead of an ovate or extended triangular blade, the blade forms a rough isosceles triangle. These points can sometimes be exceptionally small.

To complicate matters, the vast majority of the Collins points in this collection do not cleanly fall into any of these varieties. These points basically resemble the *Collins* variety except that they have strong serrations extending up the blades. Neither McGahey (2000) nor Williams and Brian (1983) mention serrations in their type descriptions, so, while these likely belong in Collins, *var*. *Collins*, these points are in a temporary Collins, *var*. *Serrated* classification. However, in discussion of these points, they will generally be subsumed under the C*ollins* variety unless specified.

*Collins*, *Claiborne,* and *Clifton* varieties all have similar bases, so most archaeologists would disregard Williams and Brain’s (1983) varieties, like McGahey (2000) has. However, there do seem to be statistical differences among these three varieties in terms of their general morphology, so we should not dispense with them so quickly. Nevertheless, it is quite likely that *Collins*, *Claiborne*, and *Clifton* simply represent different stages along the *chaîne opératoire* for the production of a Collins point. In manufacturing a point, a person could create a *Claiborne* point and resharpen the blade into a Collins needle-like tip. When the tip breaks, the point could be further resharpened into a *Clifton* isosceles triangle. As evidence for this, there are some *Clairbornes* with needle-like tips, and some *Serrated* Collins that have ovate blades. Finally, a few Collins, *var. Cliftons* have bases commensurate with those of the *Collins* variety so that only their blades are small, which strongly hints at resharpening.

Finally, Bell (1958) defines the Morris type point, which resembles a Collins point except that the base is clearly notched. This notching may be purely functional and not characteristic of a particular type (see Chapter 4). Thus, this type may be collapsed into the Collins type, which will be explored later.

The harrowing question then is whether or not we can tell if these varieties are part of one reduction sequence, and, if that proves to be the case, does this mean they should be subsumed into one type or are the varieties meaningful? These questions will be addressed at length in the next two chapters.

***Distribution of Late Woodland Points***

Without a doubt, the Late Woodland point distribution is the clearest of all the chronological distributions (Figure 3.14). There are 365 points clustered in Field 1 (Feltus). This pattern should be rather obvious, however, because we already know that Feltus dates to the Late Woodland. Forty of these points were excavated by the RLA, and 17 came from Frank's collection. However, the other 307 of these F1 points were collected by Prospere. The Late Woodland points are much smaller and more delicate than those from other time periods, so it is interesting that so many of them were collected from Field 1 and not from other fields. Thus, this point distribution not only reinforces Feltus' Late Woodland date, but it also suggests that the fields around Feltus have little to no Late Woodland component.

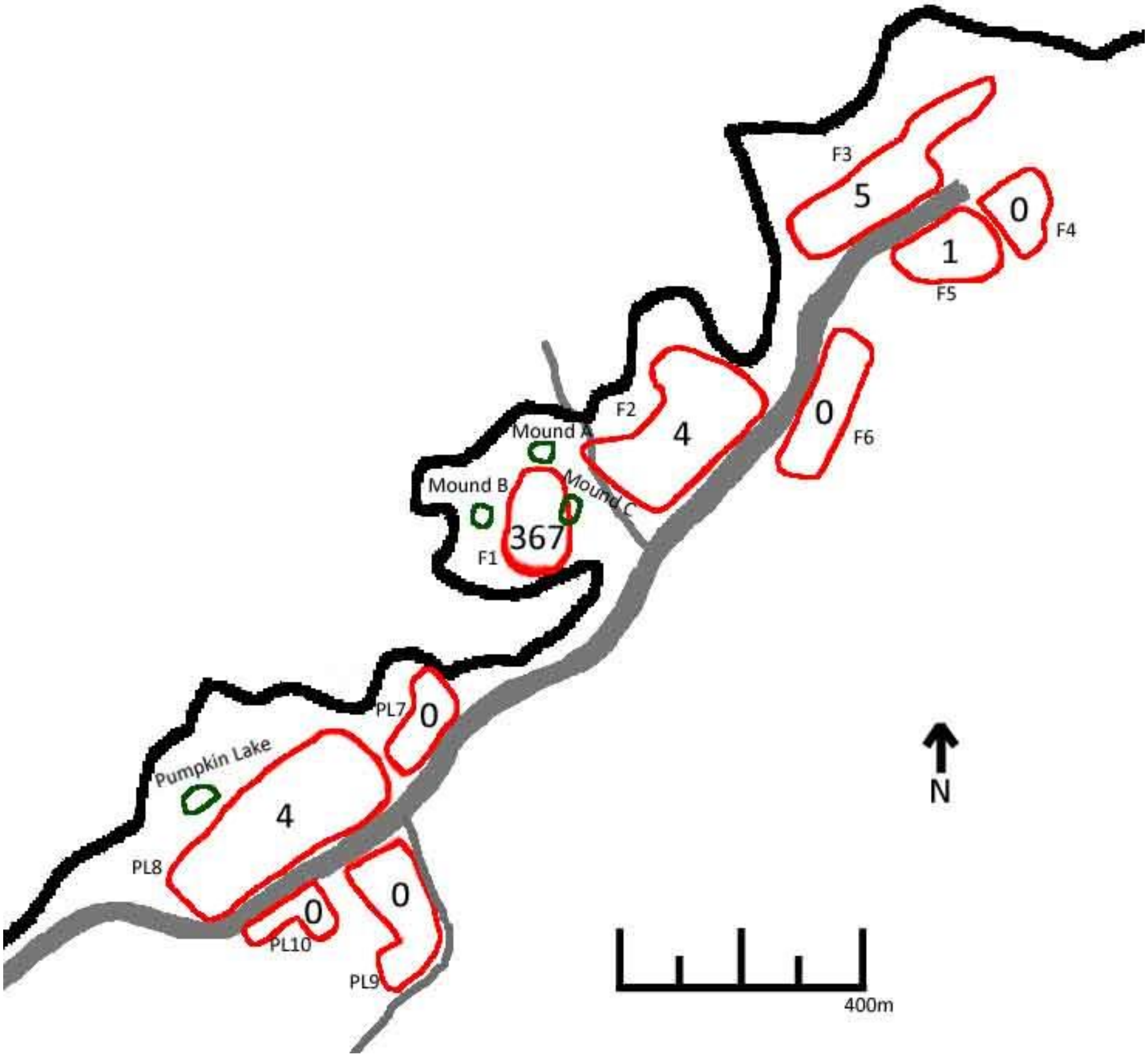



**Figure 3.14: Distribution of Late Woodland Points. This map shows the distribution of Alba, Bayougoula Fishtailed, Catahoula, Colbert, Collins (all varieties), Morris, and Scallorn points.**

## A Final Word on Types in the Collection

Even with these attempts to refine point types, there are still many points from all periods that remain unclassified. There are some triangular points that could be classified as Tortuga, Absolo, or Madison points, depending on their shape and size, but these points may also simply be preforms that lack hafting elements. Thus, the types discussed above merely represent the categories in which I am roughly confident, and a plethora of questions remains.

As the above discussion shows, the type system in southwest Mississippi is far from perfect. There are overlapping classifications, blurred distinctions between types, and overall confusion in some chronological periods. Andrefsky (1998) reminds us that types are only useful if they are able to be replicated, and this clearly, this does not seem to be the case for all types in the Feltus area.

For the next chapters, this study focuses on the Late Woodland points, which are those most closely associated with Feltus. Past research has been done to distinguish point types using metric data (DeMasi 2011), but archaeologists need to conduct more comprehensive research to get at the heart of typological problems in southwest Mississippi. While types based on morphology can be very useful, we should strive to create types that go beyond mere shape and rather look at technology and the process of creation. Instead of using standard measurements to identify types, this study uses morphometric data to analyze potential similarities in Collins varieties and corner-notched types to determine whether differences between points constitute useful types. By these means, types may show more morphological variability, but, more importantly, they may also form more meaningful groups than we have at present.

**Table 3.1: Table of Point Distribution by Chronology.**

| | Paleo-indian | Early Archaic | Middle Archaic | Late Archaic | Early Wood-land | Middle Wood-land | Late Wood-land | Groups B-I | Total |
|---|---|---|---|---|---|---|---|---|---|
| F1 | 1 | 0 | 2 | 2 | 0 | 2 | 367 | 7 | 381 |
| F2 | 0 | 0 | 46 | 7 | 1 | 6 | 4 | 6 | 70 |
| F3 | 0 | 0 | 9 | 6 | 0 | 3 | 5 | 12 | 35 |
| F4 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 5 |
| F5 | 1 | 0 | 7 | 8 | 0 | 0 | 1 | 7 | 24 |
| F6 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 4 |
| PL7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 5 |
| PL8 | 1 | 0 | 10 | 7 | 1 | 13 | 4 | 34 | 70 |
| PL9 | 2 | 0 | 3 | 2 | 0 | 5 | 0 | 6 | 18 |
| PL10 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 7 | 0 | 82 | 35 | 2 | 30 | 381 | 77 | 614 |

# Chapter 4: Technology

When we look at a projectile point, we are only looking at one particular moment in the stone's life-cycle (Andrefsky 1998). This chapter offers a brief discussion of the process of production.

In any process of tool manufacture, the first step is to acquire the resources. Because of this, we will first examine the material used to produce these points. Further, this chapter will investigate possible rock quarries that the people at Feltus may have utilized. The results of these investigations may provide insight as to how far and where they traveled for their material and may show decisions they were making in selecting their materials. Finally, I will end by discussing a few interesting methods of manufacture that are represented in the Feltus collections. The analysis of these processes could lead to broader implications about the social values at Feltus (Lemmonier 1986; Lechtman).

## Lithic Sourcing

During the last ice age, the Mississippi River deposited a thick layer of gravel along its route. At the end of that ice age, wind-blown silts formed a 30-m-deep layer of sediments atop these gravels. These eolian sediments are called loess, and the gravels that were buried below it are called pre-loess (Dockery 1995, Dockery & Thompson 2011). Because Feltus is situated atop loess, the site has no natural rock because these rocks occur meters below the ground surface. Every rock found on site would have had to be transported to Feltus via human activity.

The rocks most likely used in this area are the pre-loess gravels (Johnson et al. 1983), which consist of relatively small cobbles of variously-colored gravel chert. In order to find these gravels, the people at Feltus would have had to seek areas where the pre-loess stratum was exposed. Creeks and bluff edges are the most likely quarry sites because water and wind erode away the loess over time, revealing the gravels below. Feltus has an unusually high concentration of rock, so people likely had easy access to these quarries.

The goal of this section is to describe some potential quarries that people may have used to produce the points in the Feltus collection. The bulk of this research was conducted in two stages during summer 2012, using a grant from the Summer Undergraduate Research Fund. In the first phase, I sought possible quarries around Feltus and collected samples from each source. For the second phase, I analyzed these samples back in the RLA to determine which sites were the best sources.

### Finding the Quarries

For the first part of this research, I went to Natchez, MS, and met with locals and experts who were well-versed in Mississippi geology. Using their maps and a GPS, Mallory Melton and I drove around the Natchez Bluffs to find sites with good sources of rock material. It seems unlikely that people would transport large quantities of pre-loess gravel across long distances, so we confined our search to areas that are relatively close to Feltus. I was directed to about half of the quarries listed in this study, while Melton and I surreptitiously found the others using maps, road signs, and healthy curiosity. The majority of these sources are creek beds either in woods or under highway overpasses. One, however, is a pit currently used as a modern gravel quarry.

Overall, I sampled nine sites. Some of the quarries are from named creeks, and the others are labeled by arbitrary numbers. A complete list of the sites is listed in Table 4.1 and can be seen in the map below (Figure 4.1).

Of particular interest to me are the sites Prospere 1 and 2, two dry creek beds located on

**Table 4.1: Quarry sites sampled.**

| Site Name | Description | Located By | Latitude and Longitude | Elevation (ft) | Date Sampled |
|---|---|---|---|---|---|
| Source 1 | Coles Creek Tributary, Dried | Johnson, Wise, Melton, and DeMasi | N31.74193 W91.21827 | 165 | 6/19/2012 |
| Mud Island Creek | Dry Creek Bed | DeMasi and Melton | N31.76836 W91.14988 | 127 | 6/19/2012 |
| Source 2 | Dry Creek Bed | Bates | N31.77720 W91.19479 | 107 | 6/19/2012 |
| Whitens Creek | Coles Creek Tributary, Dried and Sandy | DeMasi and Melton | N31.60534 W91.20391 | n/a | 6/20/2012 |
| Prospere 1 | Dry Creek Bed | Prospere | N31.65762 W91.25428 | 288 | 6/21/2012 |
| Prospere 2 | Dry Creek Bed | Prospere | N31.65483 W91.24035 | 298 | 6/21/2012 |
| Gravel Pit | Rock Quarry | Bates | N31.85188 W91.08654 | 335 | 6/22/2012 |
| North Fork of Coles Creek | Dry Creek Bed | Bates | N31.79402 W91.13330 | 223 | 6/22/2012 |
| Bullens Creek | Tributary to the South Fork of Coles Creek, Dried and Sandy | Bates | N31.72967 W91.17469 | 257 | 6/22/2012 |

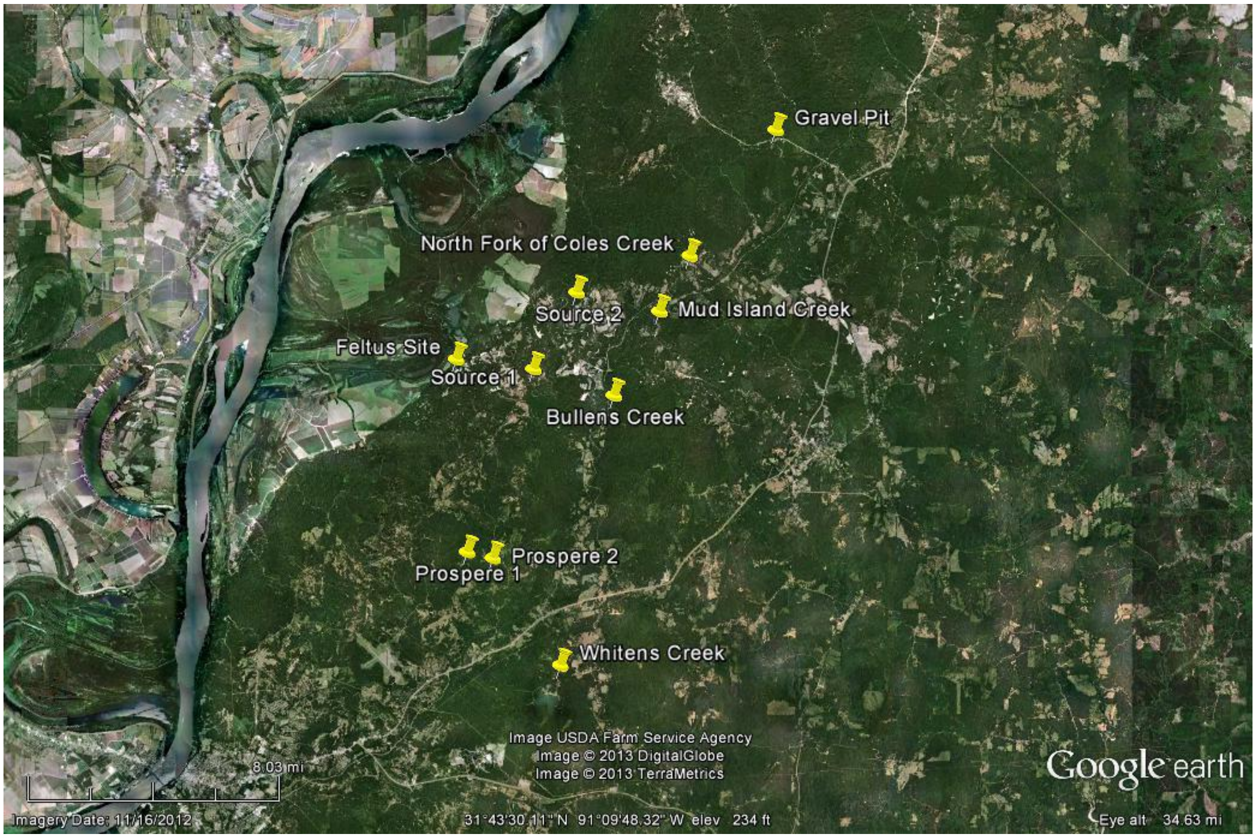



**Figure 4.1: Potential Lithic Sources. This map shows the locations of the different sites I sampled in relation to Feltus.**

Prospere's property. These creeks are situated between tall bluffs, and, on these steep bluff walls, one can clearly see meters of loess deposits and a stratum of gravels below, consistent with Dockery and Thompson's (2011) argument that local Mississippi gravels cherts are pre-loess (**Figure 4.2**).

Further, some of these lithic quarries may be archaeological sites. When visiting Prospere 2, we found a piece of Native American pottery, which is not the first piece to be found in that creek (Prospere, personal communication 2012). The Gravel Pit may serve as a potential site as well because there is a distinctive piece of fire-cracked rock and a flake in my sample (to be discussed below). While these artifacts could have been washed into these sites, their presence may perhaps indicate that these sources were ancient stone quarries.


**Figure 4.2: Prospere 2 Stratigraphy. On the left is a view of the bluff stratigraphy with several meters of loess deposits above a thin layer of gravel cherts. On the right is a closer view of these gravels. This stratigraphy indicates that people around Feltus were likely using local pre-loess gravels**

## Sampling the Quarries

For each site, I sought out a particularly dense area of large rocks and laid out a circle with a 50 cm radius on the ground. Using this guideline, I dug an 11-liter sample from this circle and, with help, screened the contents of each sample with a half-inch dry-screen on site. The sites had different sediment-to-rock ratios, so the sources with high ratios produced fewer rocks in the 11-liter sample when all the dirt and small pebbles were screened out than did sources with lower sediment content.

## Analyzing the Samples

After my stay in Natchez, I brought the nine samples back to the RLA, where I washed

**Figure 4.3: An Outlined Circle with a 50cm Radius.  I dug out an 11-liter sample of rocks from within this radius, and this image shows what the area looks like after it was sampled.**

**Figure 4.4: An 11-Liter Sample before Screening.**

and separated them into half-inch and one-inch fractions. The half-inch material would be too small to be made into a point, but, given that the smallest Late Woodland point is about half an inch, an experienced knapper would only need an inch-long cobble to produce a point. Further, many of the Late Archaic points described in the next chapter were produced from presumably small cobbles because of the cortex left on the bases (explained below).

I then sorted the inch fraction into knappable and unknappable rocks. The knappable material has a smooth rounded surface and circular overall shape (Wise, personal communication 2012). It is these types of rocks that people would have used to make tools, so the assumption here is that the sites with the highest proportions of knappable material would be the most likely candidates for an ancient Feltus quarry.

To compare the nine sites, I weighed the three fractions of each sample and calculated the percentage of knappable rocks from each (results shown in Table 4.2). All of the sites have proportions of less than .15 knappable material except for the sites Prospere 1, Prospere 2, and Gravel Pit, which had .32, .24, and .23, respectively (see Figure 4.5). Furthermore, when I visited Prospere 2, I found four large cobles (at least 20cm long), not included in the sample, that could be used for flintknapping. Because these three sites have, by far, the greatest proportion of knappable rocks, these are the most probable sources of rock material from my sample sites.

It is important to note that these sites may not be entirely representative of all the available rock quarries as I did not have access to all of the local creeks. Further, there are many other factors I am sure I have not accounted for, like which creeks would have been too flooded to quarry at the time of collection or whether certain areas had symbolic or sacred meaning. What I offer here are some probable lithic sources while, most importantly, narrowing down which creeks would *not* have been used as quarries.

**Table 4.2: Rock Weight and Count by Site.**

| Site Name | Rock Type | Rock Count | Rock Weight (kg) | Density (count/ weight) | Proportion of Rock Count* | Proportion of Rock Weight** |
|---|---|---|---|---|---|---|
| Source 1 | 1/2" | 462 | 3.53 | 130 | 0.88 | 0.40 |
| | 1"- unknappable | 49 | 4.13 | 11 | 0.09 | 0.46 |
| | 1"- knappable | 13 | 1.28 | 10 | 0.02 | 0.14 |
| Total | | 524 | 8.94 | | | |
| Mud Island Creek | 1/2" | 421 | 2.69 | 25 | 0.06 | 0.24 |
| | 1"- unknappable | 26 | 1.01 | 5 | 0.01 | 0.13 |
| | 1"- knappable | 3 | 0.53 | 167 | 0.94 | 0.47 |
| Total | | 450 | 4.24 | | | |
| Source 2 | 1/2" | 644 | 3.85 | 40 | 0.00 | 0.00 |
| | 1"- unknappable | 43 | 4.35 | 113 | 0.88 | 0.60 |
| | 1"- knappable | 1 | 0.03 | 25 | 0.11 | 0.34 |
| Total | | 688 | 8.22 | | | |
| Whitens Creek | 1/2" | 856 | 7.57 | 108 | 0.85 | 0.42 |
| | 1"- unknappable | 108 | 4.23 | 23 | 0.12 | 0.27 |
| | 1"- knappable | 11 | 0.76 | 6 | 0.04 | 0.32 |
| Total | | 975 | 12.56 | | | |
| Prospere 1 | 1/2" | 403 | 3.73 | 22 | 0.18 | 0.42 |
| | 1"- unknappable | 55 | 2.38 | 10 | 0.05 | 0.24 |
| | 1"- knappable | 17 | 2.82 | 123 | 0.81 | 0.39 |
| Total | | 475 | 8.83 | | | |
| Prospere 2 | 1/2" | 368 | 3.05 | 10 | 0.04 | 0.23 |
| | 1"- unknappable | 85 | 3.86 | 153 | 0.89 | 0.53 |
| | 1"- knappable | 23 | 2.21 | 22 | 0.10 | 0.43 |
| Total | | 476 | 9.12 | | | |
| Gravel Pit | 1/2" | 584 | 4.73 | 134 | 0.93 | 0.70 |
| | 1"- unknappable | 108 | 4.73 | 24 | 0.06 | 0.25 |
| | 1"- knappable | 30 | 2.77 | 14 | 0.01 | 0.04 |
| Total | | 722 | 12.23 | | | |
| North Fork of Coles Creek | 1/2" | 830 | 5.41 | 153 | 0.89 | 0.53 |
| | 1"- unknappable | 97 | 4.41 | 22 | 0.10 | 0.43 |
| | 1"- knappable | 6 | 0.34 | 17 | 0.01 | 0.03 |
| Total | | 933 | 10.16 | | | |
| Bullens Creek | 1/2" | 602 | 4.47 | 134 | 0.93 | 0.70 |
| | 1"- unknappable | 40 | 1.60 | 24 | 0.06 | 0.25 |
| | 1"- knappable | 4 | 0.28 | 14 | 0.01 | 0.04 |
| Total | | 646 | 6.35 | | | |

* The proportion of rock count was calculated by dividing the number of rocks in each category (1/2”, 1”-unknappable, and 1”-knappable) by the total rock count of the site.

** The proportion of rock weight was calculated in the same manner as the percentage of rock count, as described above.

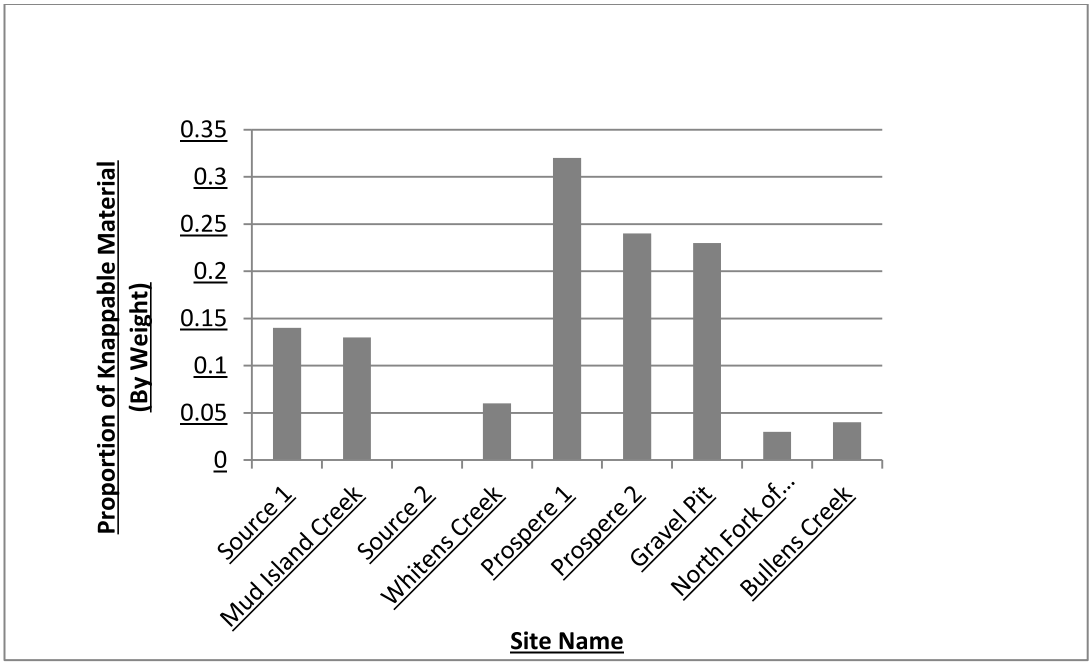



**Figure 4.5: Proportion of 1" Knappable Rock per Site. Prospere 1 clearly has the highest proportion, followed by Prospere 2 and the Gravel Pit.**

## Rock Types

The majority of points in these collections are made of local gravel cherts found at quarries like Prospere 2. These cherts vary in color, although most points are in various shades of tan. White and gray are also common, and there are some purple and red points. There are a few examples of black and white novaculite and one Benton made out of Fort Payne Chert, as expected (Johnson and Brookes 1989; McGahey 2000). The beige, brown, gray, tan, and white points likely represent colors of rocks found naturally at the quarries, while pink, purple, and red points are probably a result of heat-treatment, which may or may not have been intentional (see discussion below). Table 4.3 lists the different colors of rock for the Late Woodland points. Because the points are variegated, the colors listed are oversimplifications. For example, these points represent many shades of tan, but I have simplified the various shades into the category "tan"; otherwise, there would be a plethora of color categories. As will be discussed below, these different shades are likely a result of weathering.

After a brief analysis of the Late Woodland points, it does not seem that any particular color of chert was selected to make certain points. Most of the point types do not have large enough samples for meaningful statistics, so I can only look at Collins varieties, Scallorns, and Colberts. For these types, tan chert is by far the most popular. Even the Collins, *var. Clifton* points, which Williams and Brain (1983) argue are typically made out of exotic materials, are mainly produced from tan chert.

To determine if these colors of chert are representative of the sampled quarries, I analyzed the materials from Prospere 1 and 2 and the Gravel Pit (Table 4.4). Like the point colors, these rock quarry colors are oversimplifications as many of the cobbles contained multiple colors (discussed below). Prospere 1 and the Gravel Pit seem to have similar proportions of different materials while Prospere 2 has more gray, tan, and beige chert and fewer brown cobbles.

Although the quarry sample is not as large as the Late Woodland point collection, there are some interesting comparisons. Clearly, tan is the most prevalent point color by far, but it is not the most common rock color in the quarry samples. Conversely, brown, which dominates the quarry samples, is minimally represented in the point collections. Thus, it could be that the inhabitants of Feltus were selecting tan cherts over more prevalent brown cherts. Further, there is a high proportion of white points present in these collections, but there are no white rocks in the sampled quarries. These results could indicate that people sought out rare white material to produce points or simply that they were visiting other rock quarries not examined in this study. Further research is needed to determine the extent to which people were selectively choosing different materials for point production.

**Table 4.3: Table of Point Colors for Late Woodland Points.**

| | Beige | Brown | Gray | Pink | Purple | Quartzite | Red | Tan | White | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Alba | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 5 |
| Bayougoula Fishtailed | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 |
| Catahoula | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 9 |
| Colbert | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 7 | 2 | 11 |
| Collins, *var. Claiborne* | 2 | 2 | 6 | 1 | 2 | 0 | 3 | 10 | 8 | 34 |
| Collins, *var. Clifton* | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 5 | 3 | 16 |
| Collins, *var. Collins* | 6 | 1 | 4 | 1 | 5 | 0 | 5 | 43 | 5 | 70 |
| Collins, *var. Serrated* | 7 | 8 | 11 | 3 | 5 | 0 | 19 | 97 | 12 | 162 |
| Collins, *var. Unspecified* | 3 | 1 | 1 | 4 | 1 | 0 | 6 | 10 | 2 | 28 |
| Corner-Notched *Unspecified* | 3 | 0 | 2 | 1 | 0 | 0 | 1 | 4 | 6 | 17 |
| Morris | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 7 |
| Scallorn | 4 | 5 | 4 | 3 | 2 | 0 | 1 | 7 | 2 | 28 |
| Total | 32 | 20 | 35 | 14 | 17 | 1 | 37 | 193 | 41 | 390 |
| Proportion | .08 | .05 | .09 | .06 | .04 | .00 | .09 | .49 | .11 | 1 |

**Table 4.4: Table of Rock Colors from Three Potential Quarry Sites.**

| | Beige | Brown | Gray | Pink | Purple | Quartzite | Red | Tan | White | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Prospere 1 | 1 | 7 | 5 | 0 | 0 | 0 | 1 | 3 | 0 | 17 |
| Prospere 2 | 3 | 5 | 7 | 0 | 0 | 0 | 2 | 6 | 0 | 23 |
| Gravel Pit | 6 | 10 | 6 | 0 | 1 | 1 | 3 | 3 | 0 | 30 |
| Total | 10 | 22 | 18 | 0 | 1 | 1 | 6 | 12 | 0 | 70 |
| Proportion | .14 | .31 | .26 | .00 | .01 | .01 | .09 | .17 | .00 | 1 |

## Manufacturing Techniques

For overall production, the points in these collections were made by percussion and pressure flaking, and most points show soft-hammer retouch along the edges. Many of these points, as discussed previously, are not well made. These points have random and haphazard flaking, showing that either the manufacturer was unskilled or that these points were produced simply as expedient tools.

Conversely, some point types have a very organized and skilled pattern of flake scars. Pontchartrain points often have fine lateral flakes removed across the blades from skilled pressure retouch (McGahey 2000; Williams and Brain 1983), forming a slight ridge running up the middle of the point.

Collins points, all varieties, typically are produced by removing flakes first from the edges, moving inward (Brookes, personal communication 2010; McGahey 2000). Further, many of the Collins, *var. Collins* and *Serrated* are produced by unifacial flaking so that many of the points, especially the needle-like tips, have one side that is ridged and another that is flat. This is not a defining characteristic of the Collins type, but it is a common trait. If we assume that *Claiborne*, *Collins*, and *Clifton* varieties are all stages of the same production sequence, then this manufacturing technique can help explain these varieties' shapes.

### Base Alterations

As noted in the typologies, there are many points that exhibit chunky bases with cortex remaining. This sort of base does not represent morphological style but rather the sequence of production. The knappers likely took a cobble and struck off a large flake; the striking platform of this flake became the point's base, explaining their chunky appearance.

However, many of the types, especially Groups C and D, have either these chunky-cortex bases or thinned bases. While the former is likely from the initial production, the latter is probably a result of hafting. In Flenniken and Raymond (1986), the authors produced and subsequently broke a set of points to analyze the sequence of manufacture and use. Through this process, they found that it was necessary to alter the bases post-production in order to attach the point to the shaft. It seems that basal thinning would have been useful to fit the point to the pre-made shaft. Further, basal notching can facilitate hafting (Flenniken and Raymond 1986), so the appearance of notches in some of the Scallorn or St. Tammany bases probably represent this process. This shows that, as uncomfortable as it may make archaeologists, basal variation does not necessarily divide types. Two points could be produced with the same morphology as a Group C point, but, through the process of hafting, the bases may change. As Flenniken and Raymond (1986) argue, we need to produce types based on their production sequence and not by their appearance.

### Thermal Alteration

A good portion of the points listed above are pink, purple, or red. Often times, lithic material turns these colors through the process of thermal alteration, but other times, it occurs naturally. If the material were intentionally heat-treated, the most-widely accepted theory is that people heated stone through controlled settings in which rocks were slowly warmed (Gregg and Grybush 1976; Schindler et al. 1982). A common method is to cover rocks in a hole and light a fire over it (Gregg and Grybush 1976).

Gregg and Grybush (1976) show that thermal alteration releases interstitial water, giving the stone glass-like characteristics. This, in turn, enables easy removal of flakes and allows for sharper edges. Thus, people may have been purposefully heat-treating material pre-production to facilitate point manufacture.

Looking at the samples of rocks from the Gravel Pit and Prospere 1 and 2, the most probable sites for lithic sourcing, we find some interesting results. As already mentioned, the Gravel Pit contains a piece of clearly fire-cracked rock. This could perhaps be a result of natural processes, except that the presence of a well-defined flake in the same sample suggests that there was human activity at this site (Figure 4.6). There are no chronological markers or any other apparent artifacts, so the evidence is sketchy at best, but it does appear that some of these rocks may have been intentionally heat-treated.

It is possible that these cobbles may have been used for cooking, and thus their heat-treatment could have been a result of human activity that was not aimed at point production (Steponaitis, personal communication 2013). However, there are at least two such points that


**Figure 4.6: Gravel Pit Sample. Here is a flake (left) and a piece of fire-cracked rock (right) from the Gravel Pit. These rocks suggest human activity at this site.**

have obvious potlids (see Figure 4.7). A potlid is formed when rock undergoes thermal shock and piece of stone may pop off, leaving behind a crater-like hole. These potlids may demonstrate that people were heat-treating points post-production. Alternately, these points could have ended up in hearths, causing them to be unintentionally burned.


**Figure 4.7: Points with Potlids. From left to right are points F1-194, F2-79, and F1-385. These points have potlids on their blades indicating post-production thermal alteration.**

### *Naturally-Occurring Red Rocks*

Many of the stone material from these collections may not have been purposefully-heated. While some of these cobbles may have been indirectly heated for the purposes of cooking, the people at Feltus may have had unintentionally-heat-treated rocks because they were found at the source that way. My analysis of the Gravel Pit and Prospere 1 and 2 suggest that this may be the case.

The Gravel Pit contains one bright red rock that is the same red color as many of the red points in the collection, implying that most of the red points (except the ones with potlids) may not have been subjected to thermal alteration.

Aside from the few points that are entirely red, there are many points of variegated colors. Specifically, there are 49 points that have bases, tips, or barbs of a color dissimilar from their blades and stems (Table 4.5 and Figure 4.8). These traits are found from the Middle Archaic through the Late Woodland periods, indicating that these features are not particular to a certain culture. Initially, these variations were seen as heat-treatment, but evidence from the rock quarries suggests that they are natural.

As already mentioned, the colors listed in Table 4.3 and Table 4.4 are oversimplifications, and the reason for this is that the points and quarry cobbles are variegated. Some cobbles are brown on one side and tan on the other, while others have streaks of gray. Importantly, there are a few cobbles that, when broken open, have dark centers and lighter outer edges. For example, one rock from Prospere 2 has a bright red center surrounded by tan chert (Figure 4.9). These color variations are likely a result of weathering as iron leaches out of the cobbles over time (Steponaitis, personal communication 2013).

**Table 4.5: Color Variations by Time Period.**

| | Brown Base | Brown Tip | Gray Base | Gray Tip | Pink Tip | Purple Tip | Red Base | Red Barb | Red Tip | Tan Base | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Middle Archaic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| Late Archaic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Early Woodland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Middle Woodland | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Late Woodland | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 15 | 1 | 22 |
| Groups B-I | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 5 |
| Unclassified | 1 | 0 | 0 | 2 | 1 | 1 | 5 | 0 | 6 | 0 | 16 |
| Total | 1 | 2 | 1 | 2 | 1 | 1 | 9 | 1 | 28 | 3 | 49 |


**Figure 4.8: Points with Red Tips. From left to right is F1-2, F2-10, F2-7, and F1-45.**


**Figure 4.9: Cracked-Open Gravels from Sampled Quarries. The cobble in the top left is from Prospere 1, the top right is from Prospere 2, and the bottom three cobbles are from the Gravel Pit.**

Most of the variation seen in these points can be explained by differential weathering, but this theory may not as readily apply to points with red tips, bases, or barbs. If these points were produced from small cobbles, then the center of the point should be darker than the tip and base. Instead of natural processes, the red tips may be a product of incomplete heat-treatment (Steponaitis, personal communication 2013), or there could be a different process not yet studied. Further research is needed to answer these questions.

### A Final Note on Aesthetics

While there are clearly functional benefits to having a red-tipped point, there are other visual aspects that may be less utilitarian (Figure 4.10). For example, the Cypress Creek point PL8-28 has an effulgent silver circle on center of the blade, so the manufacturer may have purposefully produced the point so that this circle would have such a prominent position. Further, there are several points that have brown tips or bases. Even though these tips likely reflect natural color variation in the stone, the knapper may have chosen to make the brown section be the tip. These interesting aesthetics may be purely coincidental or they may represent larger cultural symbols that we do not understand. The purpose of this section is to merely point out that the people at Feltus may have been thinking about more than function when manufacturing these tools.

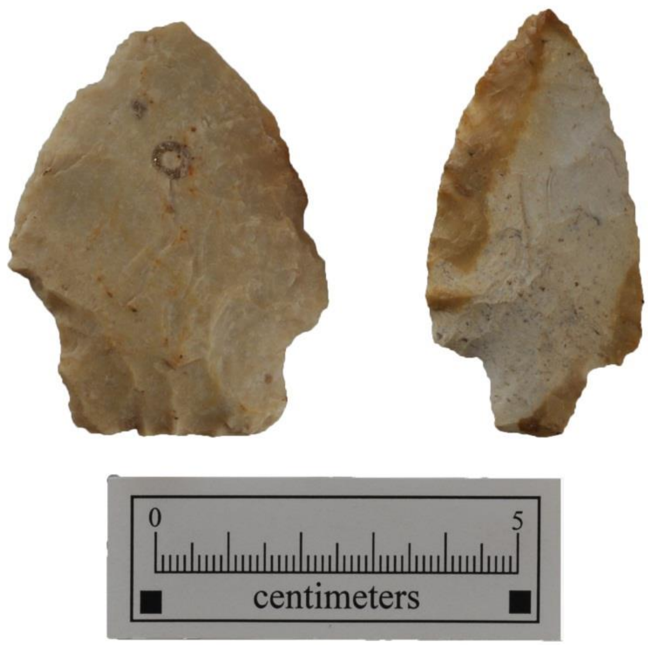



**Figure 4.10: Intriguing Points. On the left is point PL8-28, which has a circular fossil on its blade. On the right is point PL8-5, which has brown edges and tip.**

# Chapter 5: Statistical Analysis

The point types described in Chapter 3 are largely morphological and should be distinguishable by sight (although I have stated several instances where there are blurred lines). The goal of this chapter is to test these usual categories through statistical analysis to see if the visual distinctions reflect objective mathematical differences. Through this analysis, I hope to make clear the blurry lines between Late Woodland point types or lump together types that show no real distinctions.

In 2011, I conducted similar statistical analysis on the Late Woodland points to determine whether or not the types were statistically relevant (DeMasi 2011). To perform my analysis, I used calipers to measure the total length, shoulder width, base width, etc. While my results showed that there are statistical differences between Alba, Scallorn, Bayougoula Fishtailed, and the Collins types, this analysis only reflected outer morphological characteristics. As argued previously, I believe the Collins varieties merely represent different reduction stages for Collins points, and morphometric data may be useful to prove this hypothesis (Buchanan 2006).

Morphometric data are digital measurements that go beyond mere length and width. Using computers, it is possible to take nonstandard measurements in order to attain a closer look at the overall point shape (Buchanan 2005). With these measurements, it may be possible to see a standardized point shape that may transcend blade retouch and thus blur together different stages of reduction. It is my hope that, with new kinds of measurements, I will be able to better analyze and discuss Late Woodland point types.

# Methods

Only whole points that were found or excavated before summer 2012 were used for this analysis. A few broken points were used if they were missing a shoulder or base ear that could be easily estimated, but I shied away from points with broken tips because it is difficult to estimate the length of a needle-like tip. With these requirements, I have a robust sample size of 131 Alba, Bayougoula Fishtailed, Colbert, Collins (all varieties), Morris, and Scallorn points.

In order to acquire morphometric measurements, the Feltus collection had to be first digitized. I photographed the collections with standardized height, scale, and camera settings, with as many points per image as possible (these pictures can be seen in Appendix D).These images were used to create a TPS file using tpsUtil, in which these hundreds of pictures were combined into one file. I uploaded this TPS file into tpsDig2 software, where I placed 14 landmarks on each point. A landmark is a point placed at an important location, such as the tip, the end of the base, the right shoulder, etc. For this analysis, I picked landmark points that can be best used to calculate various measurements, as explained below. The 14 landmarks can be seen in Figure 5.1.

These landmarks were saved as paired coordinates (based on their locations in each image). Using Matlab (2011a), I devised a computer program that calculated measurements and angles between these landmarks by using simple geometry. This program can be found in Appendix C.

## The Variables

Using the outlined landmarks, I calculated many different measurements. Before describing them, however, let me first explain my notation. I refer to metric lengths by abbreviations of the aspect being measured; for example, mid-section width is the distance

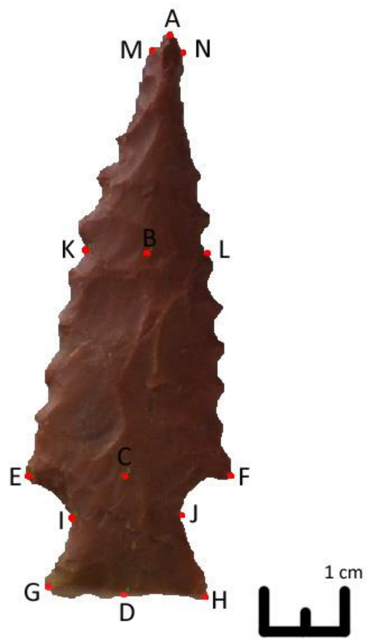



**Figure 5.1: Landmarks. The description of each landmark can be found in Figure 5.1.**

**Table 5.1: Landmarks.**

| Landmark | Description |
|---|---|
| A | Tip of the point |
| B | Blade mid-section, measured halfway between Landmark A and Landmark C |
| C | Shoulder mid-section |
| D | Base mid-section |
| E | Left corner of shoulder |
| F | Right corner of shoulder |
| G | Left corner of base |
| H | Right corner of base |
| I | Left notching of the stem (left neck) |
| J | Right notching of the stem (right neck) |
| K | Left blade edge at mid-section height |
| L | Right blade edge at mid-section height |
| M | Left edge of the tip, measured ~1mm below tip |
| N | Right edge of the tip, measured ~1mm below tip |

between landmarks K and L, and it is abbreviated mw. For ratios, the ratio of mid-section width to shoulder width would be abbreviated mwsw. As for the angles, the capitalized letter represents the landmark whose angle is being measured, and the lowercase letters represent the landmarks being used to measure the angle. Angle Eia, for example, is the angle formed by the line between landmarks I and E and the line between landmarks E and A. For angles that have two capitalized letters, these are averages between the left and right angles so that the average of angle Eia and angle Fja is called angle EFnota, where "not" denotes the notching element (landmarks I and J). For a complete list of these abbreviations, see Table C.1.

Turning to the measurements themselves, I first took standard metric measurements, such as blade and stem length and shoulder and neck width (seen in Figure 5.2). The purpose of these measurements is twofold: first, they help define the overall size and rough shape of the point. Second, I also took these measurements using calipers, so I was able to use these data to verify my Matlab program.

Aside from these standard measurements, I calculated other distances that help to define the point's overall shape in a way that may not change despite resharpening (Figure 5.3). For example, the length of the diagonals from the tip to the edge of each shoulder (diagl and diagr in Figure 5.3) will remain roughly the same when the blade edges are resharpened, assuming the tip is not drastically cut down. If a single point is produced with an ovate blade (like a Collins, var. Claiborne), the diagonal measurements should be commensurate with the diagonals of an incurvate blade (like a Collins, var. Serrated). The same should be true of the blade area, assuming the tip was not drastically cut down during retouch. With these measurements, I should be able to see continuation in measurements for a single point type in different stages of reduction.

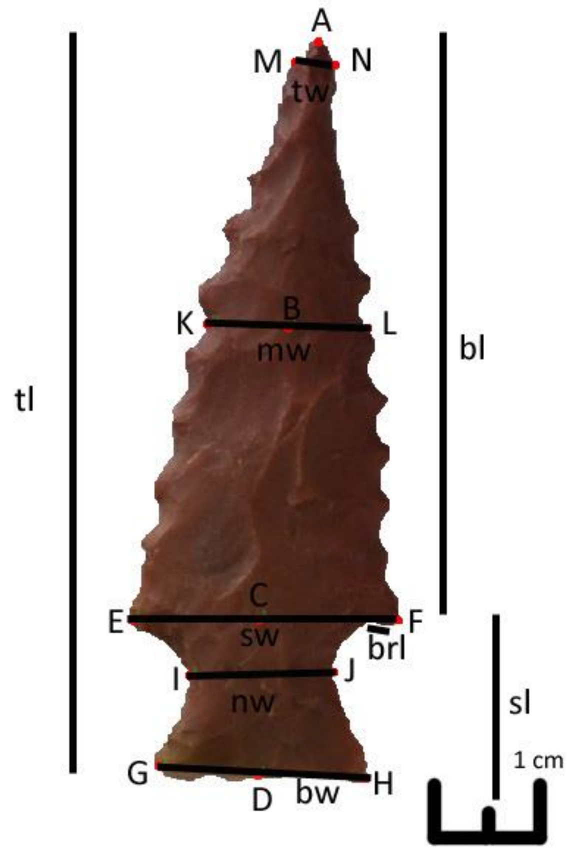



**Figure 5.2: Eight Metric Measurements. For a list of these measurements, see Table 5.2.**

Moving beyond distances, I also calculated angles between landmarks. The angle of the shoulder notches (angles I and J), the base ears (angles G and H), and the base itself (angle D) define the stem shape for each point. These angles should remain constant across various stages of reduction. Because angles I and J and angles G and H are specific to one side of the point, I averaged these angles together to create an average angle IJ and angle GH.

There are two other telling angle measurements that were calculated for this analysis: the tip angle and the angle of the shoulders. For the latter, there are four ways this angle could be calculated (see Figure 5.4). The left shoulder would use landmark E as the intersection point, but the bottom line of the angle could be formed by using landmark C (the center of the shoulder) or landmark I (the center of the left notching), and the upper line could be marked either by

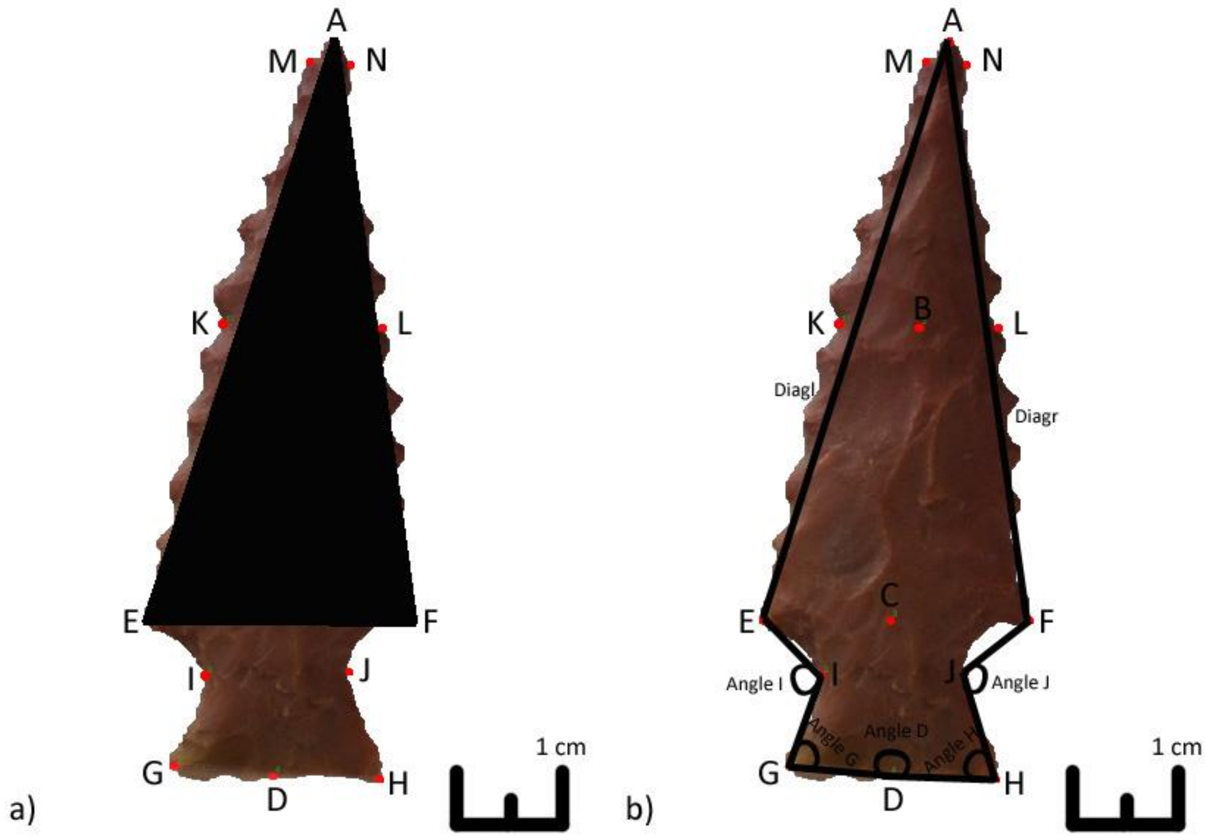



**Figure 5.3: Area and Angle Measurements. (a) shows the blade area; (b) shows angles D, G, H, I, and J, which measure the angles of the base, base ears, and notches, respectively. For a complete description of each measurement, see Table 5.2.**

landmark K (the left mid-section) or landmark A (the tip). There does not seem to be a theoretical difference between using landmark C or landmark I since these landmarks would not change with reharpening. However, Landmark I has the advantage in that one could measure angle E using the notching area by hand more easily than one could using Landmark C.

The main difference in measuring the shoulder angle comes from whether the mid-section points or the tip are used. For perfectly triangular points, like a Catahoula, this distinction would not be important, but for a Collins, *var. Serrated*, for example, the difference could be drastic because its needle-like tip allows for a much narrower triangle than its wider mid-sections would. Similarly, due to Collins, *var. Claiborne*'s ovate blade, angle E would be

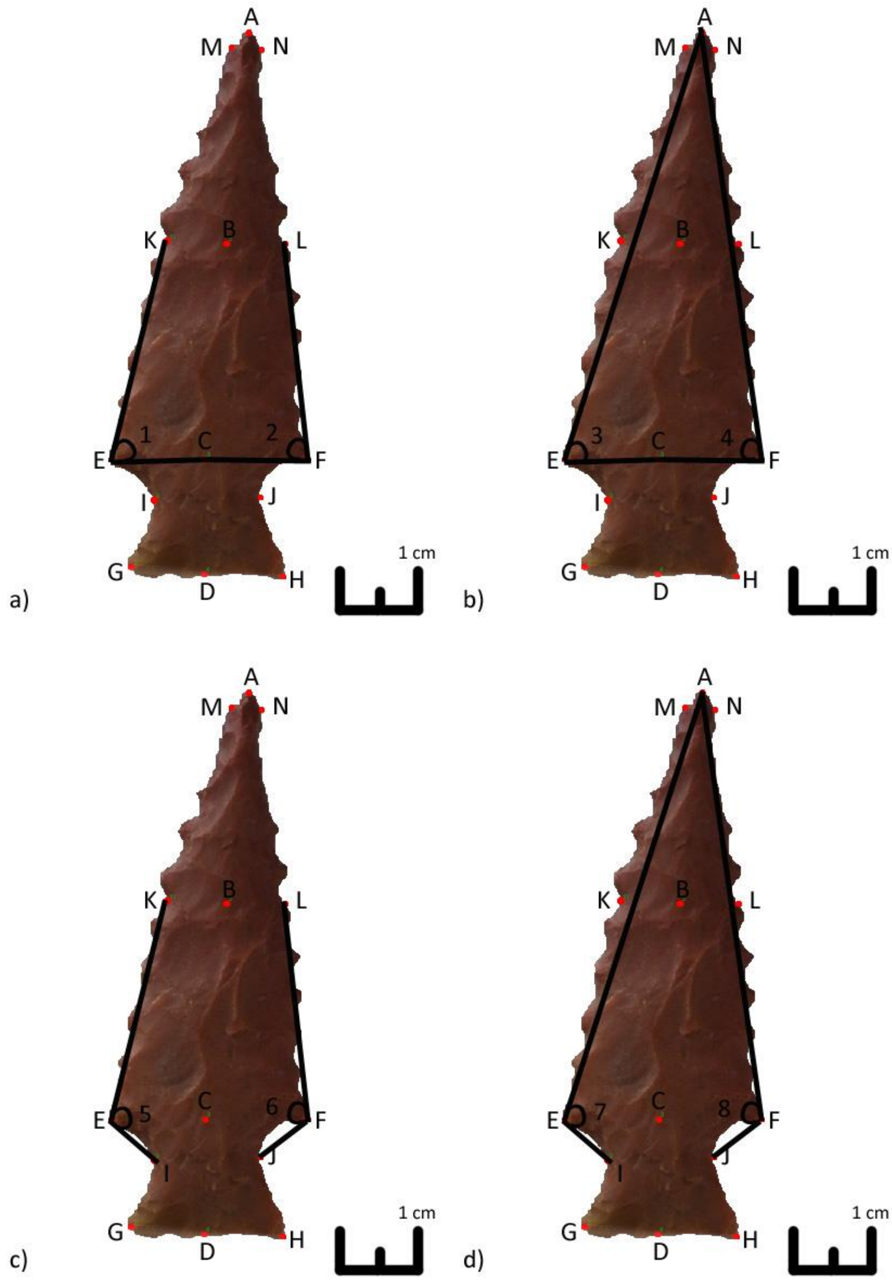



**Figure 5.4: Shoulder Angles. (a) shows angles 1 and 2 (Eck and Fcl, respectively), which are the shoulder angles when measured using the middle of the shoulders and the mid-sections; (b) shows angles 3 and 4 (Eca and Fca, respectively), which are the shoulder angles when measured using the middle of the shoulders and the tip; (c) shows angles 5 and 6 (Eik and Fjl, respectively), which are the shoulder angles when measured using the notching and the mid-sections; (d) shows angles 7 and 8 (Eia and Fja, respectively), which are the shoulder angles when measured using the notching and the tip. For a complete list of measurement descriptions, see Table 5.2.**

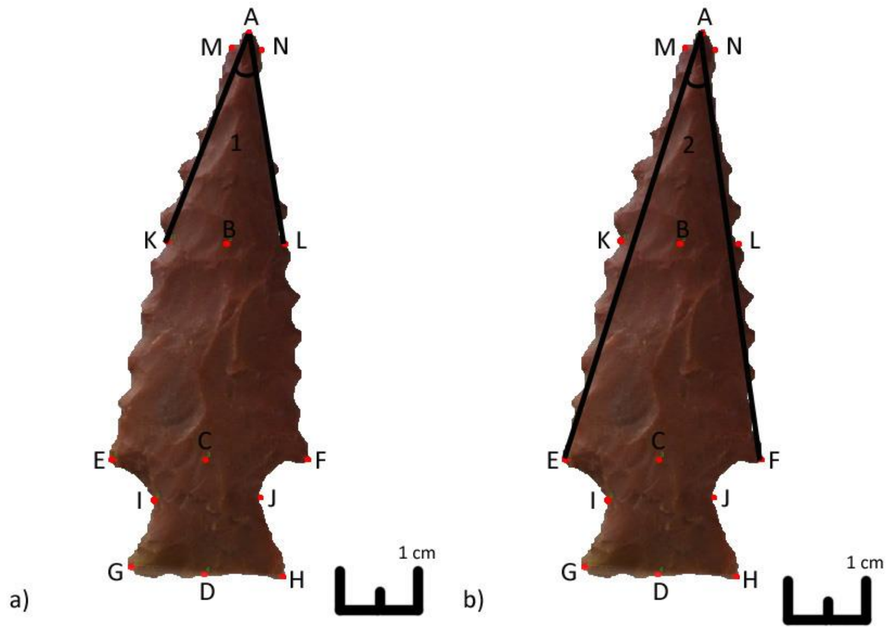



**Figure 5.5: Tip Angles. (a) shows angle 1 (Alk), which is the tip angle measured using the mid-section landmarks; (b) shows angle 2 (Aef), which is the tip angle measured using the shoulder landmarks. For a complete list of measurement descriptions, see Table 5.2.**

much wider if measured using the mid-section landmarks than it would be by using the tip. Thus, it seems reasonable to suggest that, if the shoulder angle is measured using the mid-section, then this measurement may be specific to a particular variety of Collins. However, if the tip is used, then this angle may be roughly commensurate across the different varieties of Collins because this measurement does not account for blade retouch, assuming the tip has not been greatly shortened. Like the notching and base ear angles, the left and right angles for each of these measurements were averaged together so that angles Eck and Fcl became angle EFcmid, where "mid" denotes the mid-section landmarks K and L.

Like the shoulder angles, the tip could be measured in two different ways, depending on whether one uses the mid-section or the shoulder landmarks. Similar to the shoulder angles, the tip angle may demonstrate a standardized shape for all Collins points if it is measured using the shoulder landmarks since ovate edges or retouched needle-like tips will have little effect on the angle. Conversely, the mid-section points will offer an angle measurement that varies

**Table 5.2: Measurements.**

| Measurement | Description |
|---|---|
| tl | Total length, the distance between landmarks A and D |
| sw | Shoulder width, the distance between landmarks E and F |
| nw | Neck width, the distance between landmarks I and J |
| bw | Base width, the distance between landmarks G and H |
| bl | Blade length, the distance between landmarks A and C |
| sl | Stem length, the distance between landmarks C and D |
| brl | Barb length, measured by subtracting sl from bl |
| mw | Mid-section width, the distance between landmarks K and L |
| tw | Tip width, the distance between landmarks M and N |
| twmw | Ratio of tip width to mid-section width |
| mwsw | Ratio of mid-section width to shoulder width |
| slbl | Ratio of stem length to blade length |
| swnw | Ratio of shoulder width to neck width |
| nwbw | Ratio of neck width to base width |
| diagl | Length of the left blade edge diagonal, the distance between landmarks A and E |
| diagr | Length of the right blade edge diagonal, the distance between landmarks A and F |
| diagav | Average of diagl and diagr |
| area | Area of blade, defined as (bl*sw)/2 |
| angle Alk | Angle of the tip (landmark A), measured using the mid-section landmarks K and L |
| angle Aef | Angle of the tip (landmark A), measured using the shoulder landmarks E and F |
| angle A | Average of angles Alk and Aef |
| angle Eck | Angle of the left shoulder (landmark E), measured using the middle of the shoulders (landmark C) and the left mid-section (landmark K) |
| angle Fcl | Angle of the right shoulder (landmark F), measured using the middle of the shoulders (landmark C) and the right mid-section (landmark L) |
| angle EFcmid | Average of angles Eck and Fcl |
| angle Eca | Angle of the left shoulder (landmark E), measured using the middle of the shoulders (landmark C) and the tip (landmark A) |
| angle Fca | Angle of the right shoulder (landmark F), measured using the middle of the shoulders (landmark C) and the tip (landmark A) |
| angle EFca | Average of angles Eca and Fca |
| angle Eik | Angle of the left shoulder (landmark E), measured using the left stem notch (landmark I) and the left mid-section (landmark K) |
| angle Fjl | Angle of the right shoulder (landmark F), measured using the right stem notch (landmark J) and the right mid-section (landmark L) |
| angle EFnotmid | Average of angles Eik and Fil |
| angle Eia | Angle of the left shoulder (landmark E), measured using the left stem notch (landmark I) and the tip (landmark A) |
| angle Fja | Angle of the right shoulder (landmark F), measured using the right stem notch (landmark J) and the tip (landmark A) |
| angle EFnota | Average of angles Eia and Fja |
| angle I | Angle of the left stem notch (landmark I), measured using the left shoulder (landmark E) and the left base ear (landmark G) |
| angle J | Angle of the right stem notch (landmark J), measured using the right shoulder (landmark F) and the right base ear (landmark H) |
| angle IJ | Average of angles I and J |
| angle G | Angle of the left base ear (landmark G), measured using the left stem notch (landmark I) and the middle of the base (landmark D) |
| angle H | Angle of the right base ear (landmark H), measured using the right stem notch (landmark J) and the middle of the base (landmark D) |
| angle GH | Average of angles G and H |
| angle D | Angle of the base (landmark D), measured using the left base ear (landmark G) and the right base ear (landmark H) |

considerably depending on the variety.

With digital landmarks and Matlab programming, I was able to take 18 non-metric measurements that would be difficult and/or time-consuming to measure by hand. These data should offer a more holistic view of a point's shape and can be used to show where there are and are not distinctions between types. For a complete list of data, see Appendix C.

## Results

Using STATA statistical software, I inputted the data described above in order to conduct principal components analysis. The goal of this type of analysis is to reduce redundancy in the variables so that the first few principal components, which in essence replace the initial variables, account for a large percentage of the variation in the data (Davis 1973; Shennan 1988). For example, the analysis may find that my variables "area" and "total length" (tl) are essentially measuring the same aspect: size; these variables may then be combined into the first principal component (PCA 1). By removing redundant variables, principal components analysis allows a researcher to easily identify meaningful variation amongst a large set of variables.

There are many different ways I could perform principal components analysis on these data, as there are 40 variables. In lieu of using both left and right angles for the shoulders, notching, and base ears, I used the averages of the left and right sides. As for deciding between which angle and shoulder measurement to use, a brief analysis showed that there is more variation in angle Alk (the tip angle using the mid-section landmarks) than in angle Aef, which uses the shoulder landmarks. Similarly, angle EFnota, which is the shoulder angle measured from the notching and the tip, seems to be the most useful, and I chose not to use either shoulder measurements that use the middle of the shoulders (landmark C) because they show less variation and would be more arduous to take by hand. Thus, using these angles in combination with the other angles, measurements, and ratios (all of which were standardized), a principal components analysis appears to separate the corner-notched and side-notched points.

The eigenvectors for each variable can help determine what each principal component measures. An eigenvector is a number between -1 and 1 that describes how much of the variation in each component explained by a particular variable. The closer an eigenvector is to the absolute value of 1, the more influence the variable has on the component. Variables that have high eigenvectors for the same component are likely redundant, so that this analysis can combine these variables into a broader component.

The eigenvectors for the first six principal components of this analysis can be seen in Table 5.3. As the most influential variables for the first principal component (PCA1) are total length (tl), blade length (bl), and the average of the blade diagonals (diagav), PCA1 clearly measures size. The second principal component (PCA2) accounts for the shape of the shoulders because the most influential variables are shoulder width (sw), the ratio of the shoulder width to the neck width (swnw), and the angle of the shoulders (angle EFnota). Points that score high on PCA2 have a narrow neck compared to the shoulders. For the third principal component (PCA3), the highest eigenvectors are for the mid-section width (mw) and the ratio of mid-section width to shoulder width (mwsw). Thus, PCA3 is largely influenced by the shape of the point from its shoulders to its mid-section.

In order to visualize these components, I graphed the component scores of each point. A scatterplot of PCA1 and PCA2 (Figure 5.6 and Figure 5.7) shows that there is not a great size distinction amongst the other points. The only exception is the Collins, *var. Clifton* points, which are clustered mostly on the left side of the graph, showing that they tend to be smaller than other points, as expected.

**Table 5.3: Eigenvectors for the First Six Components. ***

| Variable | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| tl | 0.4201 | 0.0270 | 0.0260 | 0.0268 | -0.0270 | 0.1468 |
| sw | 0.0581 | 0.4287 | -0.0003 | 0.2143 | 0.2035 | -0.1321 |
| nw | 0.1713 | -0.0477 | 0.2031 | 0.2911 | 0.3053 | -0.1515 |
| bw | 0.1504 | -0.1371 | -0.0973 | 0.5146 | 0.0708 | -0.0657 |
| bl | 0.4188 | 0.0631 | 0.0011 | -0.0514 | -0.1078 | 0.1276 |
| sl | 0.1577 | -0.1347 | 0.1125 | 0.3215 | 0.3153 | 0.1250 |
| brl | 0.0165 | -0.0228 | 0.2231 | -0.0402 | 0.1402 | -0.3014 |
| mw | 0.0879 | 0.2217 | 0.3827 | 0.1850 | -0.2739 | -0.2271 |
| tw | -0.0975 | 0.0960 | 0.3446 | 0.2499 | -0.2766 | 0.3752 |
| twmw | -0.1937 | -0.0888 | 0.0735 | 0.1454 | -0.0825 | 0.6105 |
| mwsw | 0.0504 | -0.1067 | 0.4154 | -0.0203 | -0.4391 | -0.0734 |
| slbl | -0.2628 | -0.1615 | 0.0921 | 0.2957 | 0.2950 | 0.0126 |
| swnw | -0.0704 | 0.4324 | -0.1412 | -0.0060 | -0.0080 | -0.0032 |
| nwbw | 0.0095 | 0.1168 | 0.3478 | -0.3576 | 0.2170 | -0.0711 |
| diagav | 0.4128 | 0.0998 | -0.0064 | -0.0290 | -0.1010 | 0.1318 |
| area | 0.3322 | 0.2997 | -0.0072 | 0.0942 | 0.0570 | 0.0209 |
| angle GH | -0.0511 | 0.2003 | 0.3148 | -0.2566 | 0.3436 | 0.2036 |
| angle Alk | -0.2948 | 0.1252 | 0.2793 | 0.1973 | -0.1217 | -0.2312 |
| angle EFnota | 0.2120 | -0.4028 | 0.1337 | -0.0670 | 0.0367 | 0.0252 |
| angle IJ | 0.1293 | -0.3198 | 0.2780 | -0.1988 | 0.1671 | -0.0449 |
| angle D | 0.0657 | -0.2175 | -0.1459 | 0.0639 | -0.2608 | -0.3463 |

* Angle Alk was used for the tip and angle EFnota was used for the shoulder angle measurements in this analysis. Only the first six components are listed because these account for 84% of the variation, as seen in Table 5.4.

**Table 5.4: Variances for the First Six Components.***

| | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| Variance | 0.2521 | 0.1835 | 0.1493 | 0.1214 | 0.0740 | 0.0634 |
| Cumulative Variance | 0.2521 | 0.4356 | 0.5850 | 0.7064 | 0.7804 | 0.8438 |

*These are the variances for the principal components analysis, using angle Alk for the tip and angle EFnota for the shoulder angle measurements. These values explain the proportion of variation described by each component.

Scores for PCA2 largely demarcate corner- and side-notched points, as the majority of corner-notched points (Albas, Colberts, and Scallorns) score much higher than the Collins, Morris, and Bayougoula points.  These data demonstrate that the corner-notched points have narrower necks compared to their shoulders.  For example, the average shoulder angle for the four varieties of Collins is 116.26 degrees while the average of Alba, Colbert, and Scallorn points is 94.59 degrees.  Further, the shoulder-to-neck width ratio for corner-notched points is 2.39 as compared to Collins' 1.88.  Clearly, the corner-notched points have relatively narrower necks and more acute shoulder angles than Collins points.

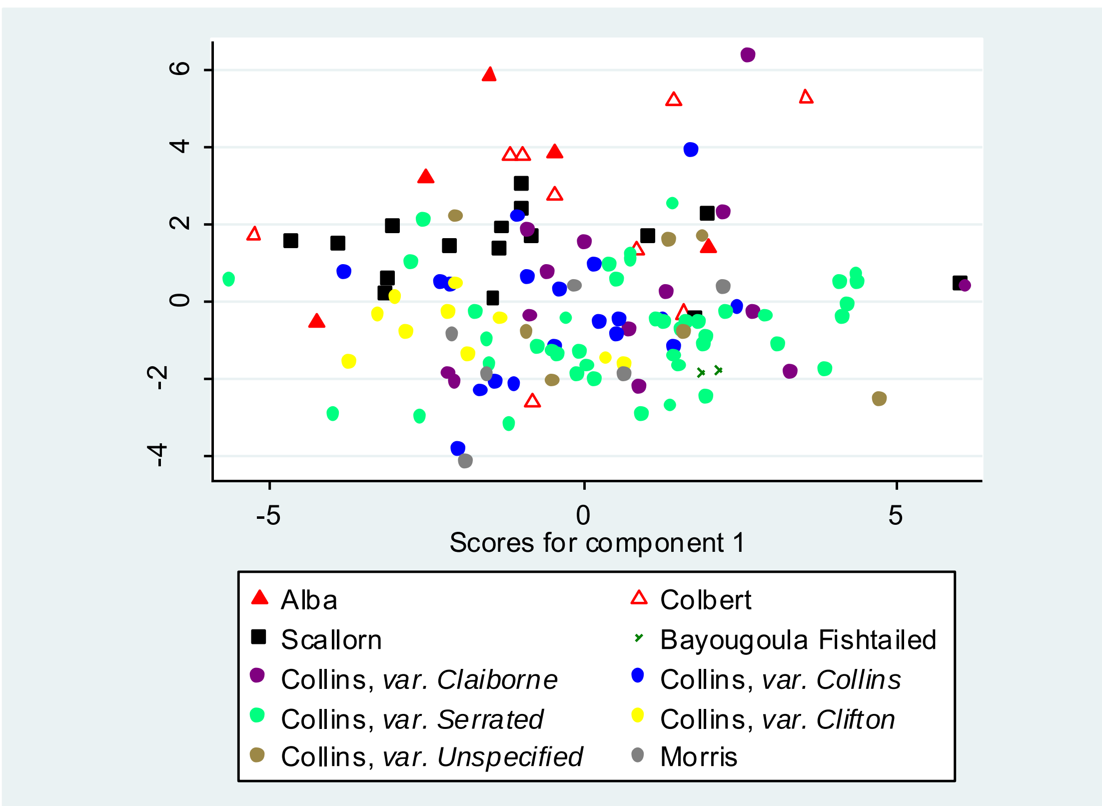



**Figure 5.6: Principal Components 1 and 2.  These are the component scores for all points when angle EFnota and angle Alk are used in conjunction with the other variables.  The corner-notched points (Alba, Colbert, and Scallorn points) largely score higher in PCA2 than the side-notched points do, indicating their different shoulder shape.**

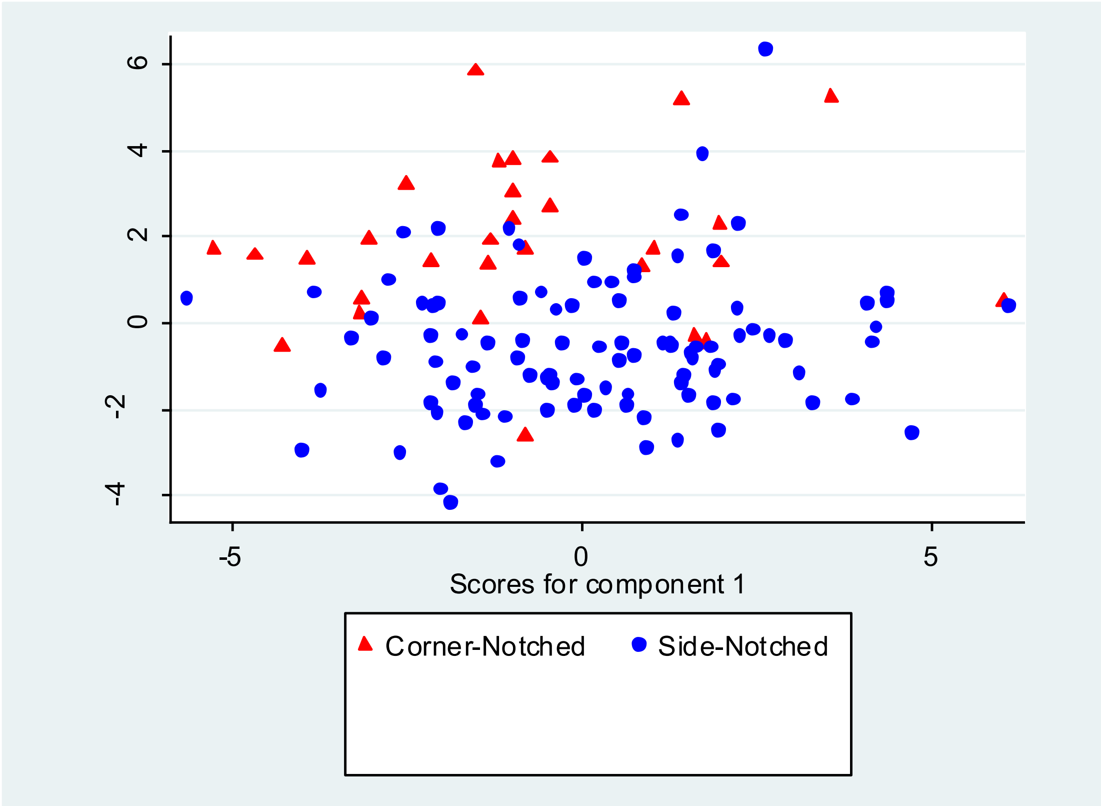



**Figure 5.7: Principal Components 1 and 2. These are the component scores for side-notched and corner-notched points when angle EFnota and angle Alk are used in conjunction with the other variables. The corner-notched points (Alba, Colbert, and Scallorn points) largely score higher in PCA2 than the side-notched points do, indicating their different shoulder shape.**

When PCA2 and PCA3 are graphed together (Figure 5.8 and Figure 5.9), the distinction between corner-notched and side-notched points becomes even more apparent. Nevertheless, PCA3 seems to have little effect on separating out the different point types, as the division is along the PCA2 axis. Clearly, the shoulder shape is a more important factor in dividing between corner- and side-notched points than the mid-section shape is, as measured by PCA3.

With these graphs, there is a clear divide between corner-notched and side-notched points. However, it is within these categories that the distinctions become blurry. Looking at a graph of PCA2 and PCA3 for the corner-notched points (Figure 5.), there is a general division between Scallorn and Alba points. Albas seem to score slightly higher in PCA2 and PCA3, but there is definitely some overlap. As for Colbert points, these are largely clustered with Alba

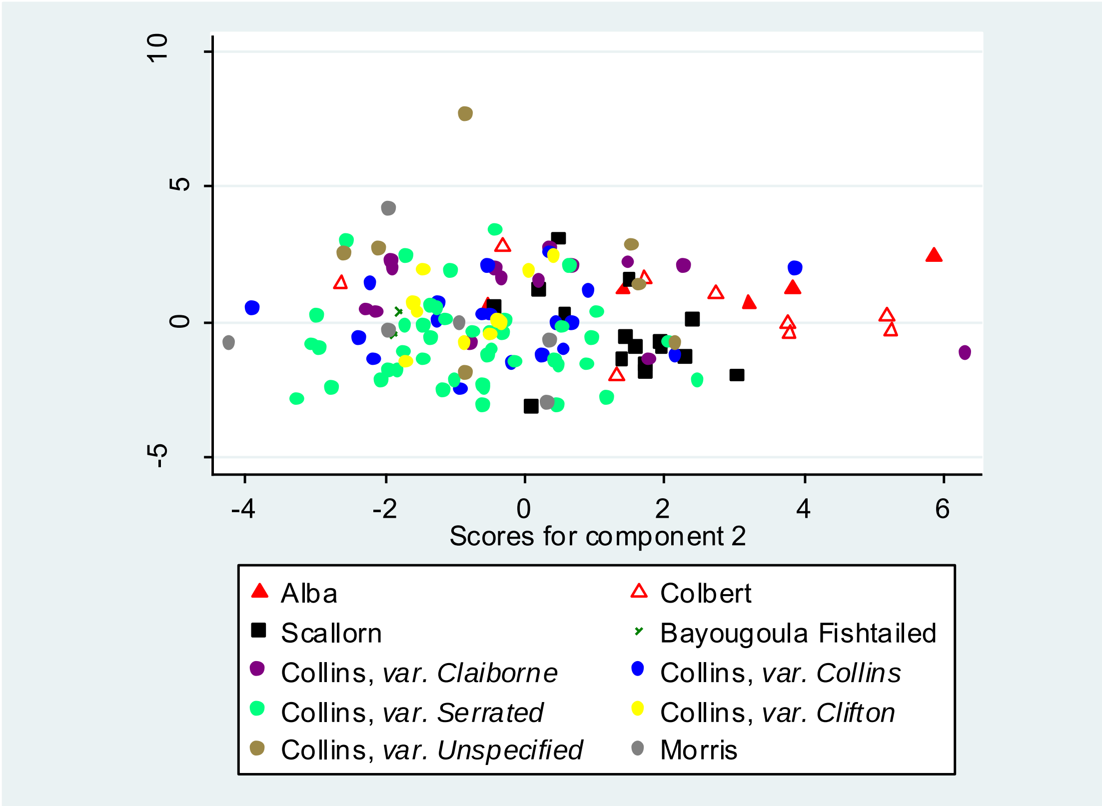



**Figure 5.8: Principal Components 2 and 3. These are the component scores for all points when angle EFnota and angle Alk are used in conjunction with the other variables. The corner-notched and side-notched points are largely divided by PCA2, which measures shoulder shape, and do not seem to be greatly affected by PCA3, which measures mid-section shape.**

points, but, just like Albas, they blur into other areas as well. It appears that the Alba and Colbert category should be merged together so that there is no important distinction between a square and bulbous stem. Nevertheless, there are several points that do not cluster in the Alba/Colbert Region, suggesting that these may be misclassified or that the type needs further refinement.

For the side-notched points, a scatter of PCA2 and PCA3 for the Collins points (all varieties) as well as the Bayougoula Fishtailed and Morris points offers even less clarity (Figure 5.11). As a general trend, the two Bayougoula Fishtailed points are clustered very close together in every graph in this analysis. While I cannot be certain with such a small sample size, it appears that this is a rather robust type.

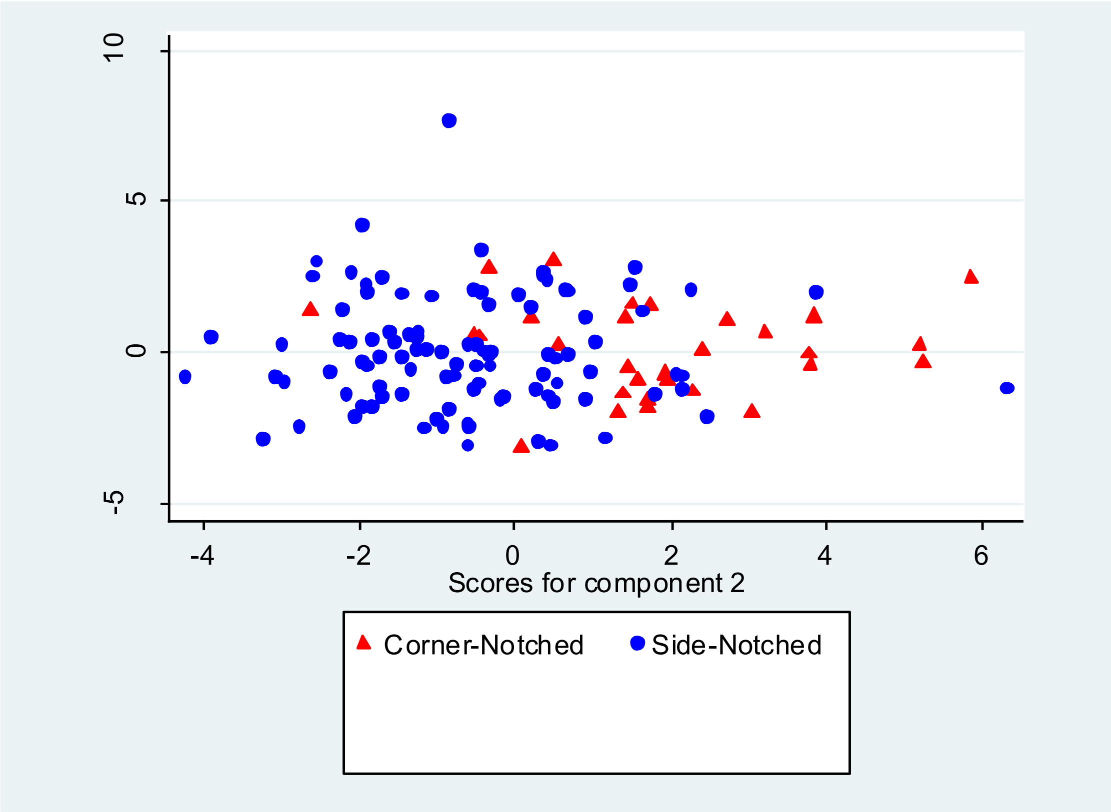



**Figure 5.9: Principal Components 2 and 3. These are the component scores for side-notched and corner-notched points when angle EFnota and angle Alk are used in conjunction with the other variables. The corner-notched and side-notched points are largely divided by PCA2, which measures shoulder shape, and do not seem to be greatly affected by PCA3, which measures mid-section shape.**

Aside from the Bayougoula Fishtailed points, the different varieties of Collins are not clearly divided. Collins, *var*. *Clifton* points appear to cluster together in a general mass, but there are *Claiborne*, *Collins*, and *Serrated* points throughout. Further, the Collins, *var*. *Claiborne* mostly have high scores for PCA2, indicating their wide mid-section shape, but distinction does not separate it out from the other varieties. Hence, this graph shows that there is not a great difference between the various types and varieties, indicating that the Collins type may not be clearly divisible into meaningful varieties.

Moreover, the Morris points blur together with the other Collins points. The morphological difference between Morris and Collins points is that Morris points have notched

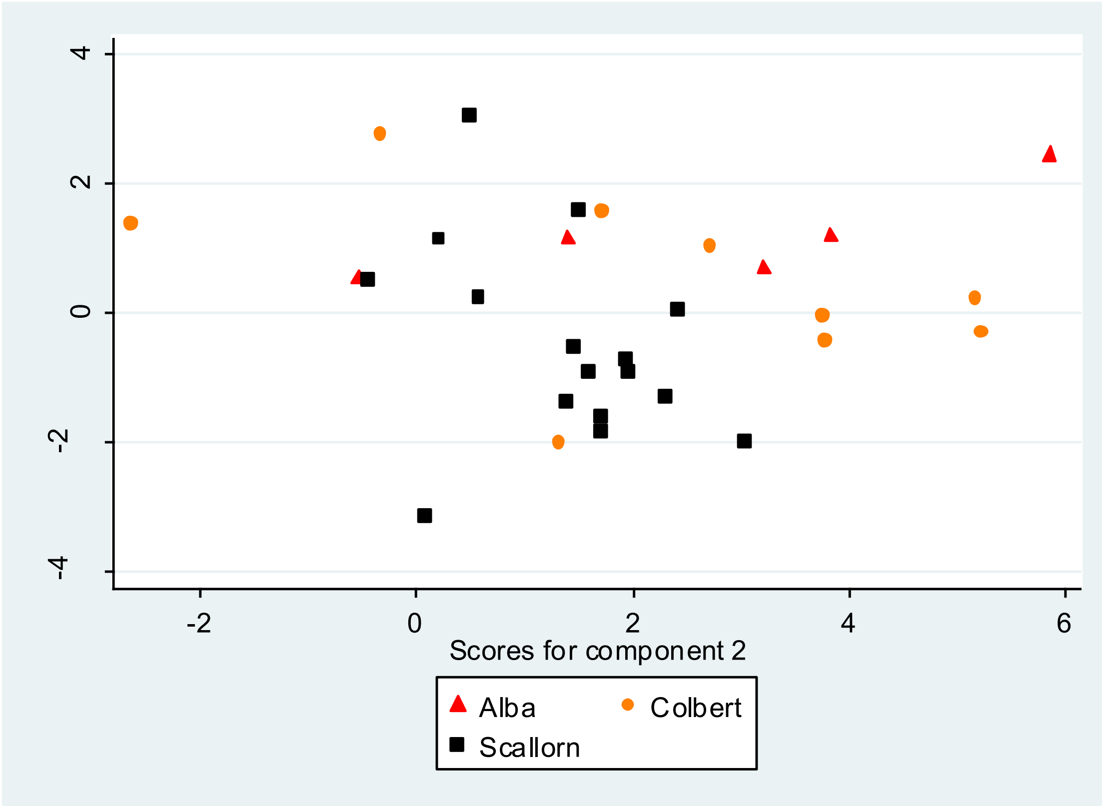



**Figure 5.10: Principal Components 2 and 3. These are the component scores for corner-notched points when angle EFnota and angle Alk are used in conjunction with the other variables. There is a general clustering of Scallorn points and of Alba and Colbert points, suggesting that Alba and Colbert types should perhaps be combined.**

bases, but, as described in the previous chapter, basal notching may simply be a result of hafting. Thus, the graph of PCA2 and PCA3 suggest that Morris points should be subsumed under the Collins type. With this analysis, it seems clear that the Collins varieties and Morris points blend together, as do the Alba and Colbert types, while the Scallorn and Bayougoula Fishtailed points may comprise the only robust type.

## Is There a Standardized Shape for Collins Points?

As already stated, there are many ways to conduct principal components analysis on these data. A different method from the one used above is to use angle Alk and angle EFnotmid together. Since these measurements are affected by the mid-section, they have the potential to distinguish blade shape, which is the main distinction among Collins points. To see if this idea

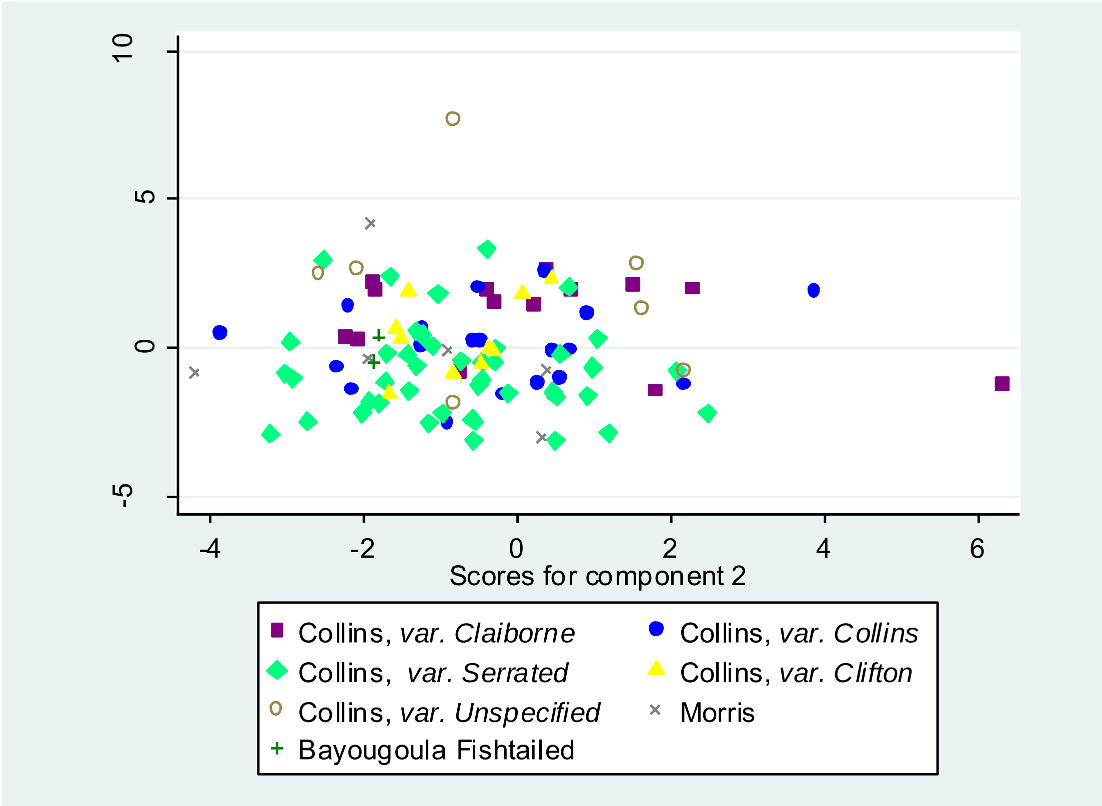



**Figure 5.11: Principal Components 2 and 3. These are the component scores for side-notched points when angle EFnota and angle Alk are used in conjunction with the other variables. With the exception of Bayougoula Fishtailed points, the types and varieties shown do not cluster together, indicating that the boundaries between these varieties are blurry at best.**

holds true, I conducted the same principal components analysis as above except that, instead of angle EFnota, I substituted angle EFnotmid, which uses the mid-section instead of the tip to measure the shoulder angles.

The eigenvectors for this analysis closely resemble those of the previous analysis (Table 5.5). The first component measures size because of its emphasis on total length (tl), blade length (bl), and the average of the blade diagonals (diagav). Likewise, PCA2 is indicative of shoulder shape, and PCA3 designated mid-section shape.

Focusing only on the Collins points, PCA3 offers the greatest distinctions. This is expected because the main difference between Collins, Claiborne, and Serrated varieties are their mid-section shape. Claiborne points remain roughly parallel through their mid-sections

**Table 5.5: Eigenvectors for the First Six Components.***

| Variable | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| tl | 0.4226 | 0.0110 | 0.0174 | 0.0239 | -0.0207 | 0.1489 |
| sw | 0.0673 | 0.4262 | 0.0600 | 0.2245 | 0.1775 | -0.1397 |
| nw | 0.1727 | -0.0728 | 0.1792 | 0.2932 | 0.3240 | -0.1404 |
| bw | 0.1480 | -0.1328 | -0.1271 | 0.5102 | 0.0771 | -0.0617 |
| bl | 0.4220 | 0.0493 | 0.0004 | -0.0546 | -0.1010 | 0.1294 |
| sl | 0.1560 | -0.1499 | 0.0811 | 0.3217 | 0.3161 | 0.1266 |
| brl | 0.0179 | -0.0460 | 0.2131 | -0.0372 | 0.1516 | -0.2978 |
| mw | 0.1025 | 0.1566 | 0.4087 | 0.1893 | -0.2772 | -0.2325 |
| tw | -0.0891 | 0.0494 | 0.3538 | 0.2553 | -0.2810 | 0.3719 |
| twmw | -0.1966 | -0.0874 | 0.0604 | 0.1478 | -0.0844 | 0.6113 |
| mwsw | 0.0581 | -0.1730 | 0.3947 | -0.0235 | -0.4218 | -0.0729 |
| slbl | -0.2667 | -0.1617 | 0.0691 | 0.2985 | 0.2906 | 0.0123 |
| swnw | -0.0629 | 0.4481 | -0.0681 | 0.0023 | -0.0459 | -0.0181 |
| nwbw | 0.0141 | 0.0832 | 0.3588 | -0.3501 | 0.2292 | -0.0648 |
| diagav | 0.4167 | 0.0867 | -0.0025 | -0.0314 | -0.0964 | 0.1331 |
| area | 0.3397 | 0.2897 | 0.0278 | 0.0981 | 0.4550 | 0.0176 |
| angle GH | -0.2863 | 0.0887 | 0.3020 | 0.2033 | -0.1309 | -0.2370 |
| angle Alk | 0.1862 | -0.4234 | 0.1325 | -0.0591 | -0.0214 | 0.0021 |
| angle EFnotmid | -0.0448 | 0.1704 | 0.3407 | -0.2465 | 0.3410 | 0.2063 |
| angle IJ | 0.1237 | -0.3471 | 0.2209 | -0.2014 | 0.1948 | -0.0352 |
| angle D | 0.0603 | -0.2044 | -0.1781 | 0.0555 | -0.2468 | -0.3454 |

*The principal components analysis was conducted using angle Alk for the tip and angle EFnotmid for the shoulder angle measurements. Only the first six components are listed because these account for 84% of the variation, as seen in Table 5.6.

**Table 5.6: Variances for the First Six Components.***

| | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| Variance | 0.2502 | 0.1833 | 0.1521 | 0.1212 | 0.0739 | 0.0633 |
| Cumulative Variance | 0.2502 | 0.4335 | 0.5856 | 0.7067 | 0.7806 | 0.8440 |

*These are the variances for the principal components analysis, using angle Alk for the tip and angle EFnotmid for the shoulder angle measurements. These values explain the proportion of variation described by each component.

while *Collins* and *Serrated* varieties form narrow, needle-like tips beginning at the mid-section.

A scatter of PCA1 and PCA3 vaguely shows this distinction (Figure 5.1212). The *Claiborne* points as a whole score higher on PCA3 than the other varieties, and the *Serrated* variety scored slightly lower than most Collins varieties. As before, the only distinguishing factor for *Clifton* points is their size, as measured by PCA1.

While the use of angle EFnotmid and angle Alk may be useful to help classify different varieties of Collins points, angle EFnota and angle Aef offer a more standardized shape that may transcend blade retouch. Because both of these angles are calculated using the tip and shoulder landmarks, the resulting angles offer a more standardized shape that would not alter greatly when

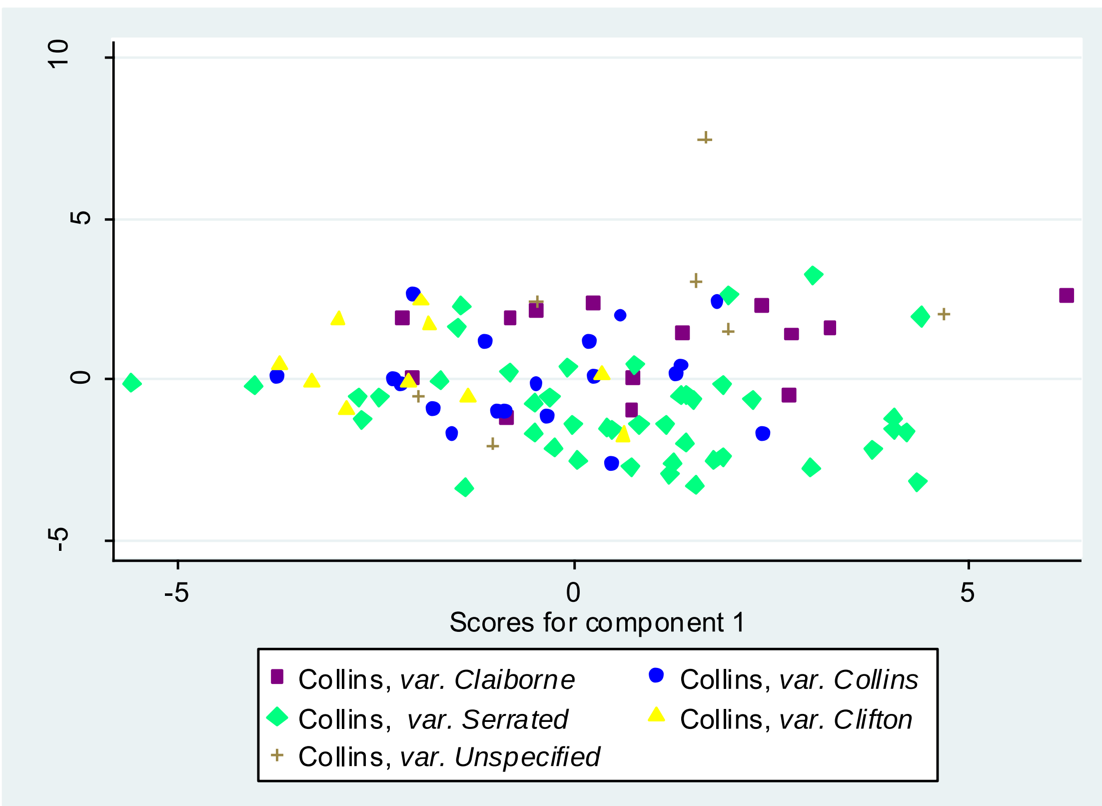



**Figure 5.12: Principal Components 1 and 3. These are the component scores for Collins points when angle EFnotmid and angle Alk are used in conjunction with the other variables. The *Cliftons* are largely clustered on the left side of the graph due to their size, while *Claiborne* points generally score higher for PCA3 than the other types do. This graph demonstrates the greatest distinctions between the different Collins varieties.**

the blade edges are reshaped.

The eigenvectors for PCA1 and PCA2 mirror the other analyses so that the first two principal components measure size and shoulder shape (Table 5.7). However, PCA3 is different in this analysis. Instead of mid-section variables, PCA3 is largely influenced by ratio of neck width to base width (nwbw) and the angle of the base ears (angle GH) so that this component measures the shape of the base rather than the shape of the mid-section. This is interesting because, for the previous two analyses that used angle Alk, the fourth principal component is indicative of the base width. By removing measurements taken with the mid-section, we lose the variable that defines the mid-section shape, essentially telling us that blade shape is not important. By disregarding blade shape, this analysis should show fewer divisions between the Collins varieties.

Beginning with a graph of PCA1 and PCA2, there are blurred lines between the different varieties of Collins points (Figure 5.13). As with the other graphs, *Clifton* points are clustered towards the left side of the PCA1 axis since they tend to be smaller than the other points. Otherwise, the shoulder shape (PCA2) does not seem to divide along type boundary lines, indicating that, as already known, all of the Collins varieties have the same morphological characteristics from the shoulders down.

Similarly, a graph of PCA2 and PCA3 reflect shoulder and base similarities amongst the varieties (Figure 5.14). There is some variation in PCA3 scores, as *Claiborne* points have higher scores than the other varieties. Nevertheless, the varieties overall are clustered rather tightly together, showing little differentiation in base shape and shoulder shape.

While there appears to be some variation for *Claiborne* points in regard to PCA3 scores, a graph of PCA1 and PCA3 largely remove this variation (Figure 5.15). Here, the *Claiborne*

**Table 5.7: Eigenvectors for the First Six Components.***

| Variable | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| tl | 0.4084 | 0.0832 | -0.0327 | 0.0257 | -0.0256 | -0.1672 |
| sw | 0.0018 | 0.4432 | -0.0237 | 0.2128 | 0.1743 | 0.1039 |
| nw | 0.1682 | -0.0095 | 0.0981 | 0.3828 | 0.2989 | 0.1412 |
| bw | 0.1417 | -0.0862 | -0.2726 | 0.4650 | 0.0440 | 0.0558 |
| bl | 0.4046 | 0.1153 | -0.0344 | -0.0649 | -0.0821 | -0.1086 |
| sl | 0.1640 | -0.0986 | -0.0011 | 0.3722 | 0.2199 | -0.2888 |
| brl | 0.0300 | -0.0272 | 0.2296 | 0.0556 | 0.1870 | 0.3518 |
| mw | 0.1091 | 0.2074 | 0.3048 | 0.2467 | -0.2510 | 0.3264 |
| tw | -0.0706 | 0.0633 | 0.2950 | 0.3328 | -0.4550 | -0.1275 |
| twmw | -0.1798 | -0.1143 | 0.0778 | 0.1889 | -0.3049 | -0.4094 |
| mwsw | 0.1174 | -0.1345 | 0.3678 | 0.0569 | -0.4049 | 0.2065 |
| slbl | -0.2446 | -0.1815 | 0.0350 | 0.3472 | 0.1992 | -0.1275 |
| swnw | -0.1211 | 0.4189 | -0.0872 | -0.0689 | -0.0359 | -0.0216 |
| nwbw | 0.0189 | 0.0938 | 0.4596 | -0.1953 | 0.2454 | 0.0783 |
| diagav | 0.3943 | 0.1515 | -0.0434 | -0.0469 | -0.0841 | -0.1127 |
| area | 0.2875 | 0.3462 | -0.0458 | 0.0828 | 0.0539 | -0.0261 |
| angle GH | -0.3414 | 0.1767 | 0.0405 | 0.2154 | 0.1547 | 0.1453 |
| angle Aef | 0.2529 | -0.3701 | 0.0858 | 0.0000 | 0.0879 | -0.0455 |
| angle EFnota | -0.0478 | 0.1675 | 0.4244 | -0.1110 | 0.2399 | -0.3273 |
| angle IJ | 0.1705 | -0.3066 | 0.2856 | -0.0608 | 0.2294 | 0.0134 |
| angle D | 0.0738 | -0.1919 | -0.2110 | -0.0028 | -0.0881 | 0.4685 |

* The principal components analysis was conducted using angle Aef for the tip and angle EFnota for the shoulder angle measurements. Only the first six components are listed because these account for 84% of the variation, as seen in Table 5.8.

**Table 5.8: Variances for the First Six Components.***

| | PCA1 | PCA2 | PCA3 | PCA4 | PCA5 | PCA6 |
|---|---|---|---|---|---|---|
| Variance | 0.2599 | 0.1889 | 0.1389 | 0.1204 | 0.0751 | 0.0604 |
| Cumulative Variance | 0.2599 | 0.4488 | 0.5877 | 0.7082 | 0.7833 | 0.8437 |

* These are the variances for the principal components analysis, using angle Aef for the tip and angle EFnota for the shoulder angle measurements. These values explain the proportion of variation described by each component.

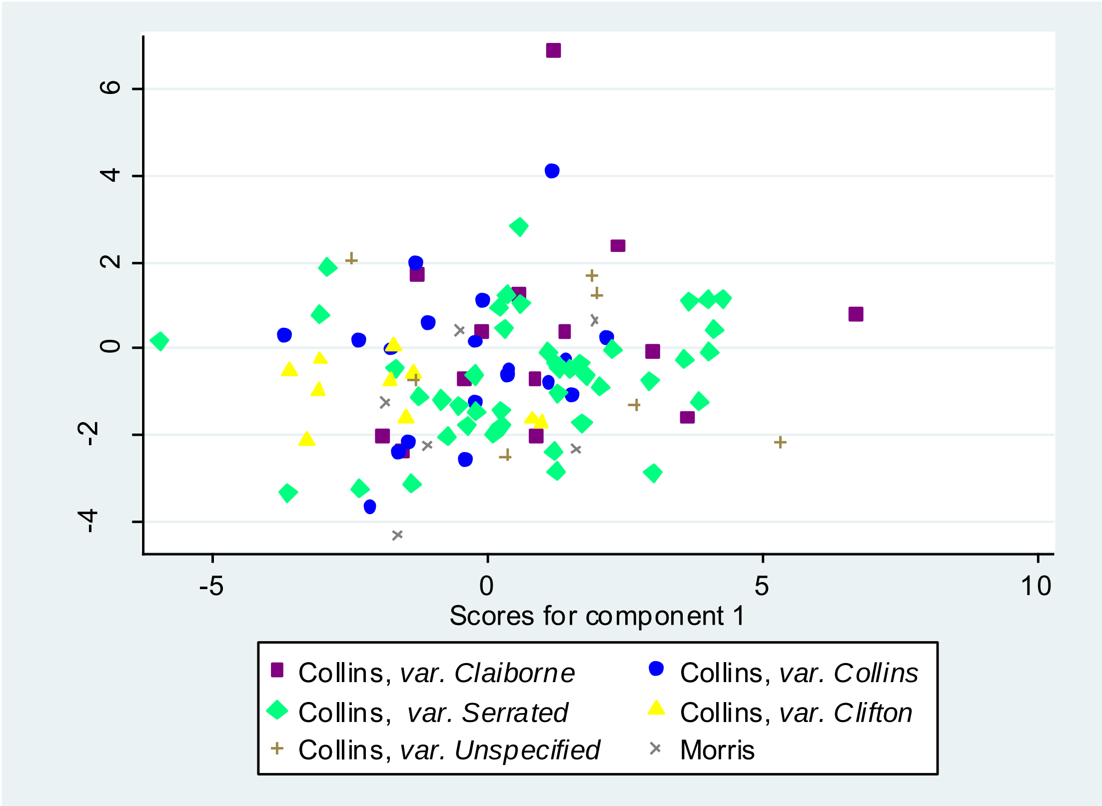



**Figure 5.13: Principal Components 1 and 2. These are the component scores for Collins points when angle EFnota and angle Aef are used in conjunction with the other variables. The *Clifton* points cluster on the left side of PCA1, indicating their small size. Otherwise, the boundaries between the other varieties are blurred.**

points are more integrated into the general cluster of Collins points, showing that, when size is involved in classification, there are even blurrier boundaries between the Collins varieties.

The variables used for this analysis seem to standardize the Collins blade shape so that the distinctions between a C*ollins* and a *Claiborne* are not as relevant. By removing angles that are measured with mid-section landmarks K and L, it is possible to identify a basic blade shape that is not largely affected by blade resharpening (see below).

## A Collins Sequence of Reduction

The lack of variation in the scatterplots above indicates that Collins points have similar shoulder and base shapes. For example, simple boxplots of stem attributes demonstrate that the

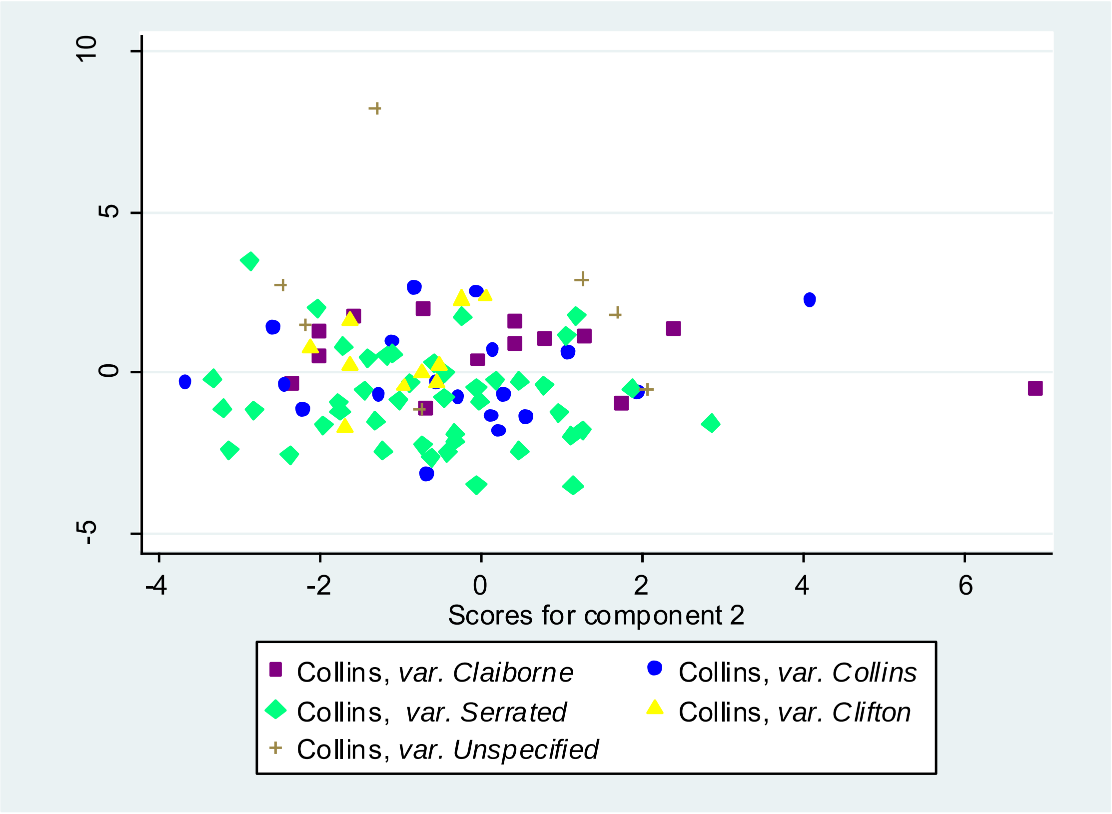



**Figure 5.14: Principal Components 2 and 3. These are the component scores for Collins points when angle EFnota and angle Aef are used in conjunction with the other variables. The *Claiborne* variety generally has high scores for PCA3, but, overall, the varieties tend to cluster together, showing few distinctions amongst themselves.**

different varieties of Collins show little variation in stem shape (Figure 5.16). Following Andrefsky (1998) and the majority of archaeologists who believe that point types should be based on stem shape alone, it would appear that these varieties all constitute one point type.

However, if we clump the Collins varieties together, we lose meaningful variation in blade shape because *Claibornes* have ovate blades while *Collins* have extended triangular blades. Some examples show a combination of ovate blades with needle-like tips, indicating that the *Collins* variety may be simply a retouched *Claiborne*. As the *Serrated* variety tends to have skinnier tips than the *Collins* variety, *Serrated* points may be resharpened *Collins*. When the point gets resharpened to the extent that it loses its needle-like tip, it may fall under the

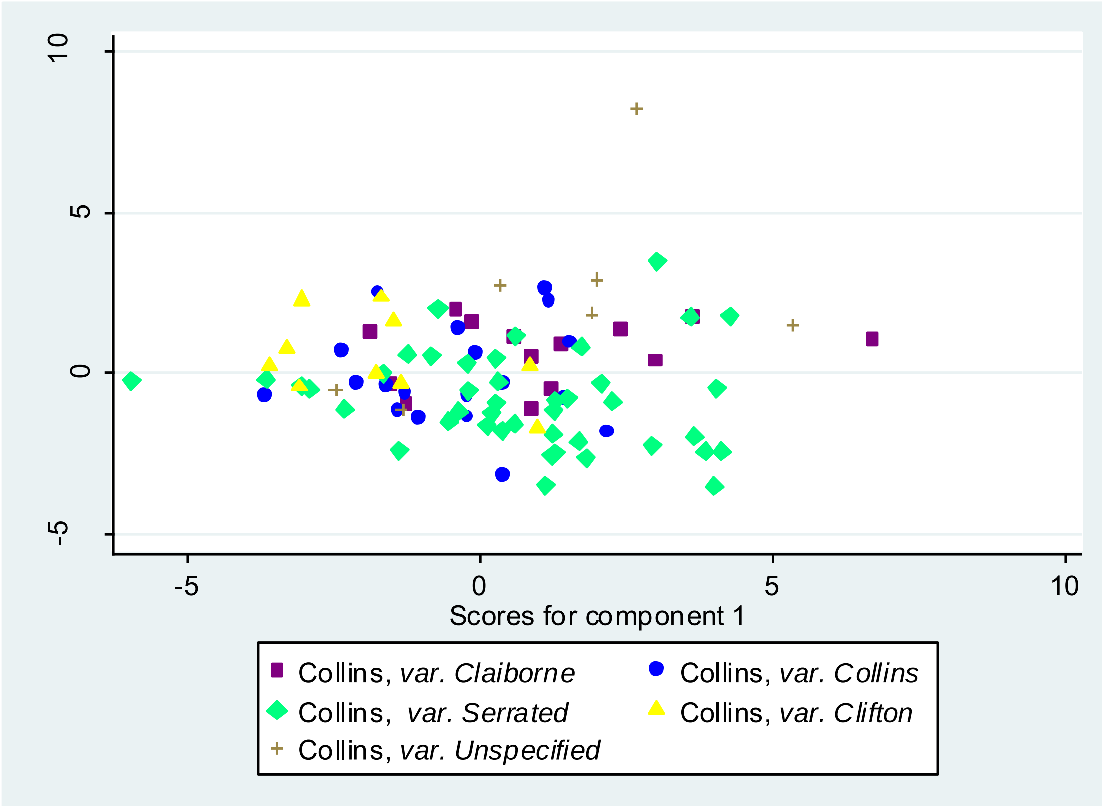
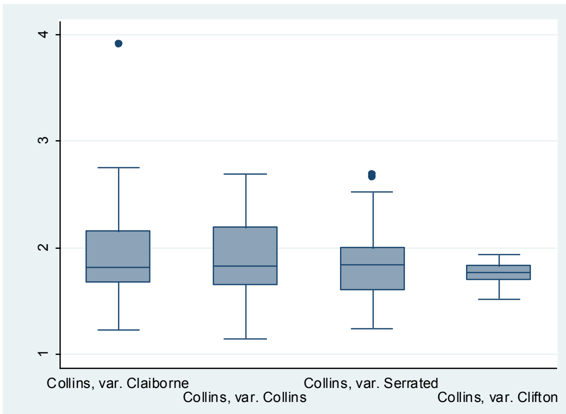


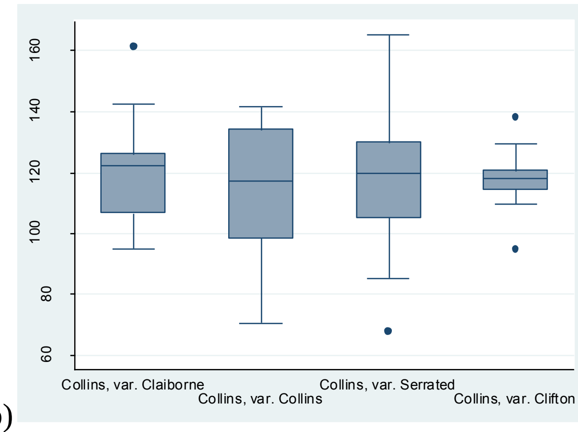

**Figure 5.15: Principal Components 1 and 3. These are the component scores for Collins points when angle EFnota and angle Aef are used in conjunction with the other variables. The *Clifton* points have low scores on PCA1 because of their small size, but, otherwise, the different varieties tend to cluster together with slightly lower PCA3 scores for Collins, *var. Serrated* points.**

Clifton variety, whose only distinction is that it is significantly smaller than the other varieties. Importantly, there are a few Clifton points whose bases are miniscule compared to the other Collins varieties. It is these two or three points that may warrant their own type since it is highly unlikely that a Collins, var. Claiborne point was produced with so small a stem, but, with these few exceptions, the other Clifton points are likely the final stage of Collins point manufacture.

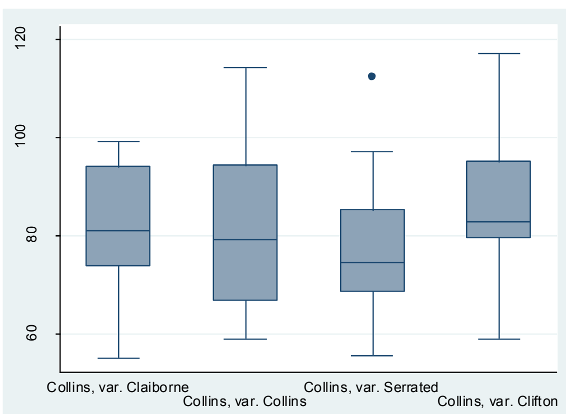
This sequence of reduction (Figure 5.17) can be exemplified by the mid-section shape of each point. Measurements that use the mid-section points (landmarks K and L) show the distinctions between each variety (Figure 5.18). As the point moves down the reduction sequence from a Claiborne to a Collins and then to Serrated, the mid-section width (mw) and tip a)




b)




c)




d)

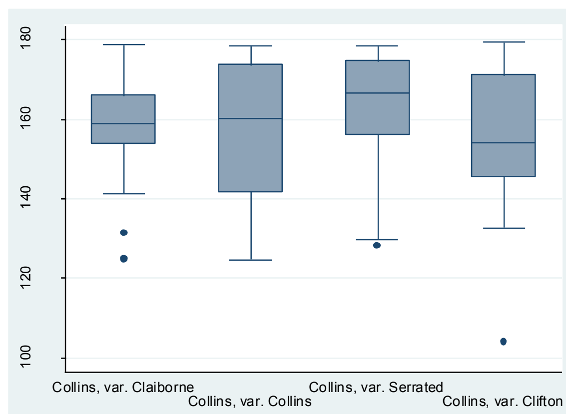



**Figure 5.16: Collins Stem Attributes by Variety. (a) shows the ratio of shoulder width to neck width (swnw); (b) shows the average angle of the stem notches (angles I and J); (c) shows the average angle of base ears (angles G and H); and (d) shows the angle of the base (angle D).**

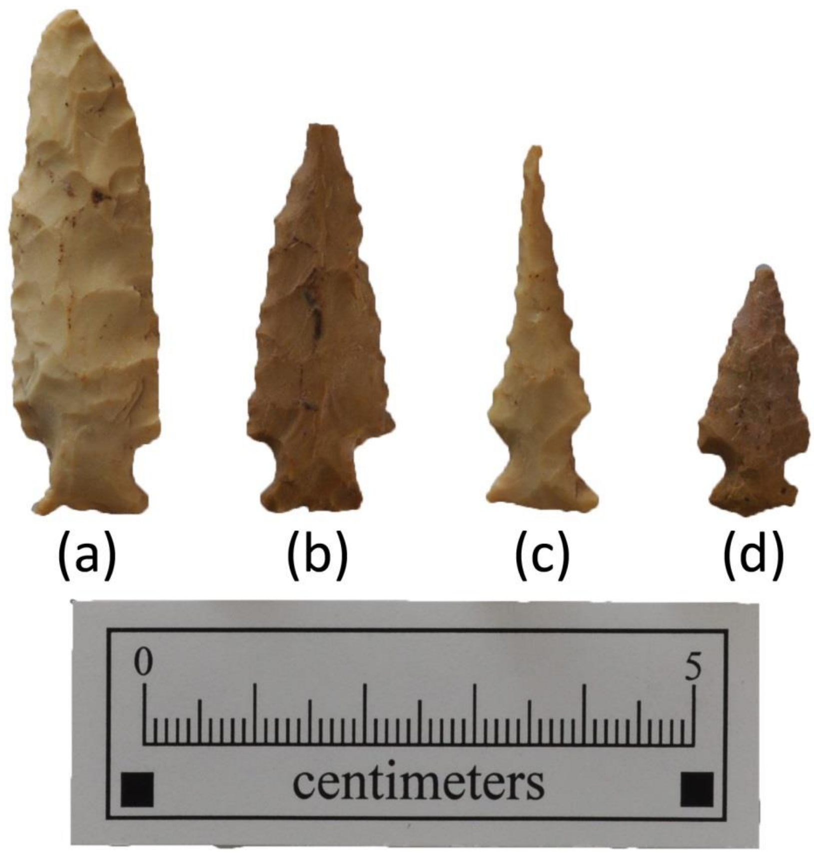



**Figure 5.17: Collins Reduction Sequence. (a) is a *Claiborne;* (b) is a *Collins;* (c) is a *Serrated;* and (d) is a *Clifton.***

width (tw) decrease because the ovate blade is resharpened into an extended triangular blade. This process causes a decrease in angle Alk (the tip measurement using the landmarks K and L) as well as in the ratio of mid-section width to shoulder width (mwsw). Once the point is resharpened to a *Clifton*, however, these measurements increase because the blade loses its needle-like tip and becomes more triangular in shape.

Importantly, when we remove angles that account for mid-section landmarks, the variation in blade shape largely disappears, and Collins points seem to cluster together with few variations. For example, the tip angle Aef, as measured using the shoulder landmarks E and F instead of the mid-section landmarks K and L show little variation among the varieties (Figure 5.19). Rather, this measurement shows an imagined standardized blade shape that would remain

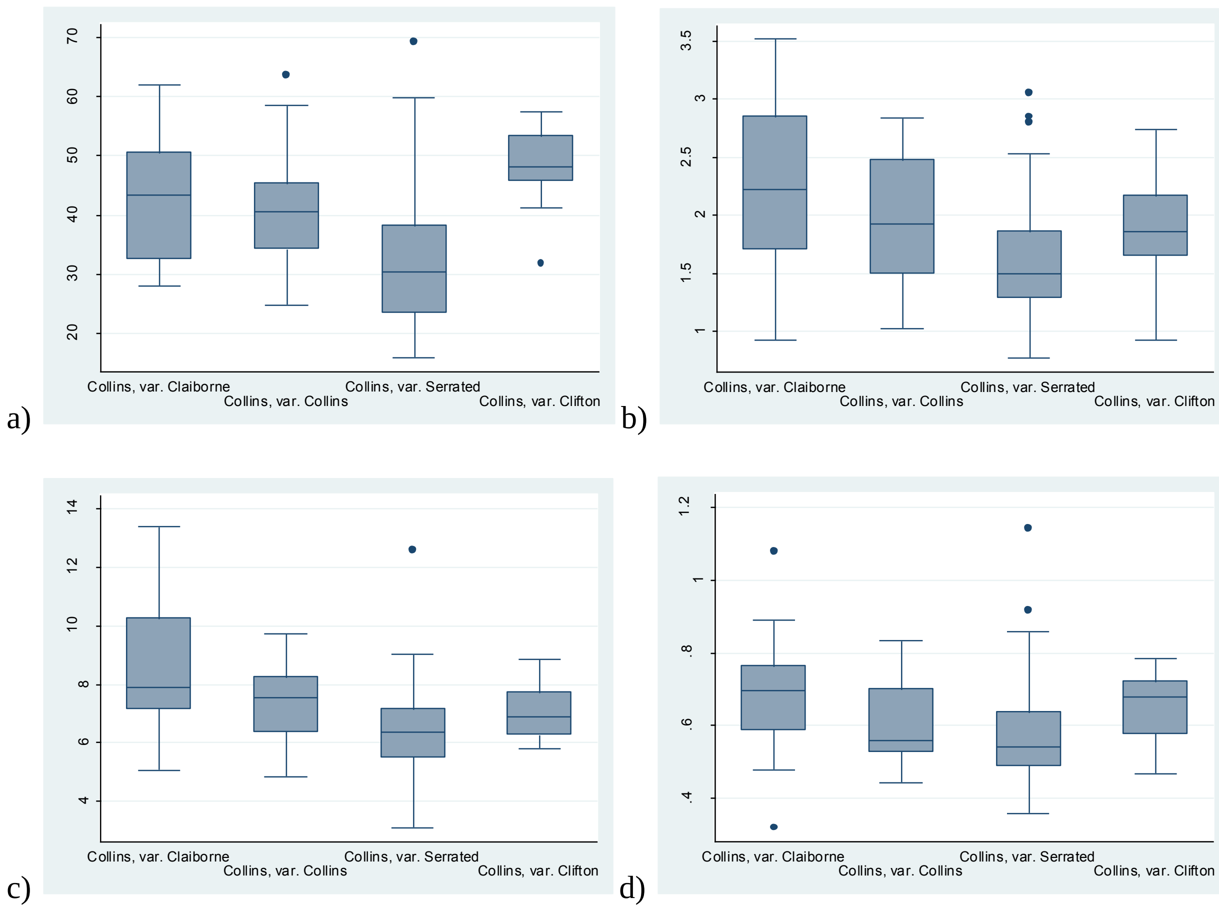



**Figure 5.18: Collins Blade Attributes by Variety. (a) shows angle Alk (the tip angle measured using the mid-section landmarks K and L); (b) shows the tip width (tw); (c) shows the mid-section width (mw); and (d) shows the ratio of mid-section to shoulder width (mwsw).**

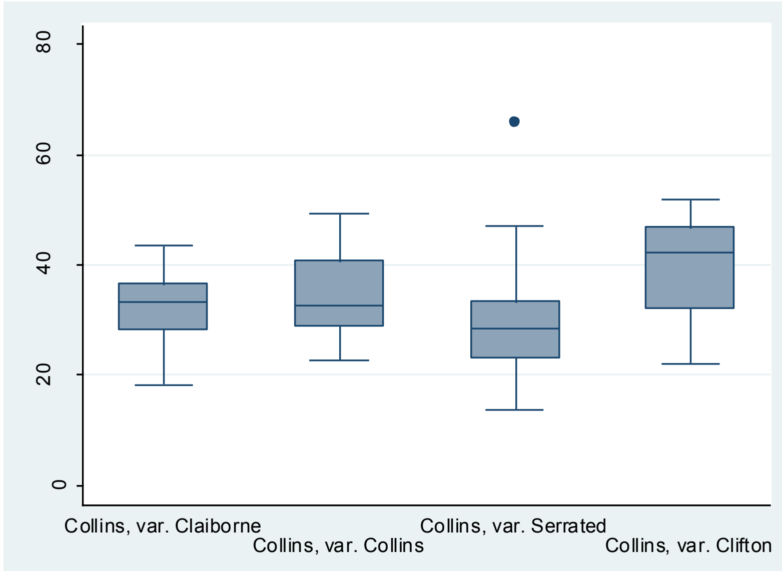



**Figure 5.19: Angle Aef across Collins Varieties. This is the angle of the tip using the shoulder landmarks E and F.**

relatively constant through lithic reduction.

By looking at measurements that that involve mid-section landmarks K and L, the different Collins varieties become visible. Because the stem attributes remain the same while the blade shape changes in regular pattern, these varieties indicate a standardized pattern of lithic reduction for Collins points.

## Conclusion

Through these different forms of analysis, there are clearly distinctions between corner-notched and side-notched points. However, the classifications within these categories could be improved. Scallorn points and Bayougoula Fishtailed types seem to cluster together more cleanly than the other types, so these types may need little refinement.

As for Colbert and Alba types, these boundaries blur together so that the stem shape that nominally distinguishes the two may spurious. Instead, these classifications could likely be merged together. Likewise, Morris points blend together with Collins points, so the notching in

Morris' bases may not be a relevant morphological characteristic for classification. Because of this, Morris points could likely be reclassified as Collins points.

For the Collins points themselves, the different varieties represent meaningful variation across the sequence of reduction so that a *Claiborne* is the first stage of production and *Clifton* is the final stage. This pattern can be seen when analyzing measurements taken with mid-section measurements, and it disappears when the mid-section is ignored.

This analysis shows that, instead of focusing on purely stem shape to classify points, archaeologists need to further explore the different ways we can use blade shape to distinguish patterns of reduction.

# Chapter 6: Conclusions

A thousand years ago, people at Feltus were actively producing, using, resharpening, breaking, and discarding projectile points. While evidence from this field indicates Late Woodland activity, points from the nine surrounding fields suggest that there were also Paleoindian, Middle Archaic, and Late Archaic, as well as Early and Middle Woodland components in this area. These generations of connected and unconnected people were likely visiting local quarry sites, typically in the form of creek beds, to collect pre-loess gravels for point manufacture, and, once collected, several of these cobbles underwent heat-treatment in order to make the material more workable. Throughout the millennia, their resource base and thermal alterations did not greatly change; however, the morphology of their points did. Unfortunately, the point type system in southwest Mississippi is not fully equipped to identify these stylistic changes.

## Point Types at Feltus

While the Paleoindian and Middle Archaic point types are relatively stable in that researchers can easily identify them, it is the Late Archaic, Middle Woodland, and Late Woodland types that need reformulation. For the Late Archaic and Middle Woodland points in the Feltus collections, there is a plethora of asymmetrical points with roughly square stems. Despite their prevalence, there is no clear type for these points as they could easily fit into Kent or Edwards Stemmed types, which are chronologically separated by nearly one thousand years. Rather than arbitrarily divide these points into the two types, I created temporary groupings in an attempt to highlight meaningful variation. Future research will need to perform morphometric and statistical analysis on these and other Late Archaic and Middle Woodland points in order to create distinct and useful types.

It is this kind of research that I undertook for the Late Woodland points. Even though these types were not as confounding as those for the Late Archaic period, they still offered overlapping boundaries as Scallorn points blurred into Albas and Albas into Colberts. Using my refined types and morphometric data, statistical analysis suggests that Colberts can be subsumed into the Alba type while the Scallorn type can stand alone. Further, the Morris type could be lumped together with Collins points as the Morris basal notching does not seem distinctive enough to merit its own type.

### The Collins Type

The story is a little more complicated for the Collins varieties. Williams and Brain (1983) were right in noticing that Collins points can have drastically different blade shapes. By defining these blades as distinctive varieties, these authors further the idea that a *Claiborne* point was the product of a different process than the one that produced a *Serrated* point. However, my analysis suggests just the opposite.

As Andrefsky (1998) argues, projectile points are resharpened throughout their use-lives so that, while the stem stays the same, the blade shape changes. The Collins points demonstrate Andrefsky's (1998) ideas except that, instead of showing random variation in blade shape, the Collins reduction sequence is standardized. When first produced, a *Collins* point has an ovate blade, indicative of the *Claiborne* variety. As it is retouched, it is slimmed down to *Collins'* skinny extended triangular blade, culminating in the even more slender *Serrated* variety. Finally, when the tip can no longer be thinned, the blade may be sharpened down into a small *Clifton* blade.

This sequence creates a *habitus* of production (see Dietler and Herbich [1998] for further discussion), which means that, because the same choices were being made along the reduction sequence, these varieties are all part of one style (Hegmon 1998; Lemonnier 1986; Lechtman 1977). If the goal of typology is to create classifications that show styles of production and thought, then these varieties should be collapsed into one type. The only difference between *Claiborne*, *Collins*, *Serrated*, and *Clifton* varieties are the stages of resharpening at which they appear in the archaeological record, which is largely arbitrary (Andrefsky 1998).

Nevertheless, there is something meaningful in the fact that each point began with an ovate blade and was resharpened to a needle-like tip. This *habitus* of reduction indicates that people at Feltus had a standardized method of resharpening a Collins point, and this sequence may be indicative of larger social ideas or decisions. For these reasons, it may be useful to keep the variety classifications, but these varieties would not signify a different way of making a point under the Collins type umbrella. Rather, these varieties would only suggest different stages of the *same* resharpening sequence. They are all the same type, but they were discarded at different stages of reduction.

## A New Approach to Typology

There is more to typology than morphological and functional features. In order for archaeologists in southwest Mississippi to create useful point types, we need to look beyond the surface in order to discern the thought process that went into creating them. This sequence of production from acquiring raw materials through depositing the point in the archaeological record can reveal how the flintknappers and his or her social group viewed the world and made decisions (Lemmonier 1986; Lechtman 1977). By classifying points based on their *chaîne opératoire*, archaeologists could create meaningful categories that allow for some morphological variation within types.

While many researchers classify points solely on their stems, this analysis shows that basal modification may simply be part of a point's use-life. As seen in the last chapter, the notching in Morris bases is not an important enough characteristic to statistically distinguish it from Collins points. Likely, these notched or concave bases may have been expedient solutions to help attach the points to their shafts (Fenniken and Raymond 1986).

Conversely, a point's overall shape should be used for classification. Using morphometric data, researchers can create a "standardized" blade shape that may reduce variation between some resharpened points while still highlighting meaningful blade characteristics. This blade shape in conjunction with stem attributes can help create types that transcend the effects of both blade and base retouch.

## Final Thoughts

Archaeologists need to take a holistic approach in classifying projectile points. Morphology and function are not enough, but rather technology and other stylistic features need to be addressed in creating meaningful types. With this mindset, types may become more clearly defined and offer both interesting questions and answers about decision-making and world views into archaeological research.

There are many blurred and confusing boundaries in the current projectile point type system for southwest Mississippi, but this can be changed. With a new approach to types that focuses on the sequence of production in conjunction with morphology and function, the type system can be reformed.

# Appendix A: Glossary of Point Types

The type descriptions listed were drawn from Bell (1958), McGahey (2000), Shambach (1998), Williams and Brain (1983), and Webb (1981); however, I have adjusted these type descriptions to better suit the collection. Further, I created some provisional categories, which are designated by letters; these groups are my own invention and require more study. See Chapter 3 for a discussion of these types.

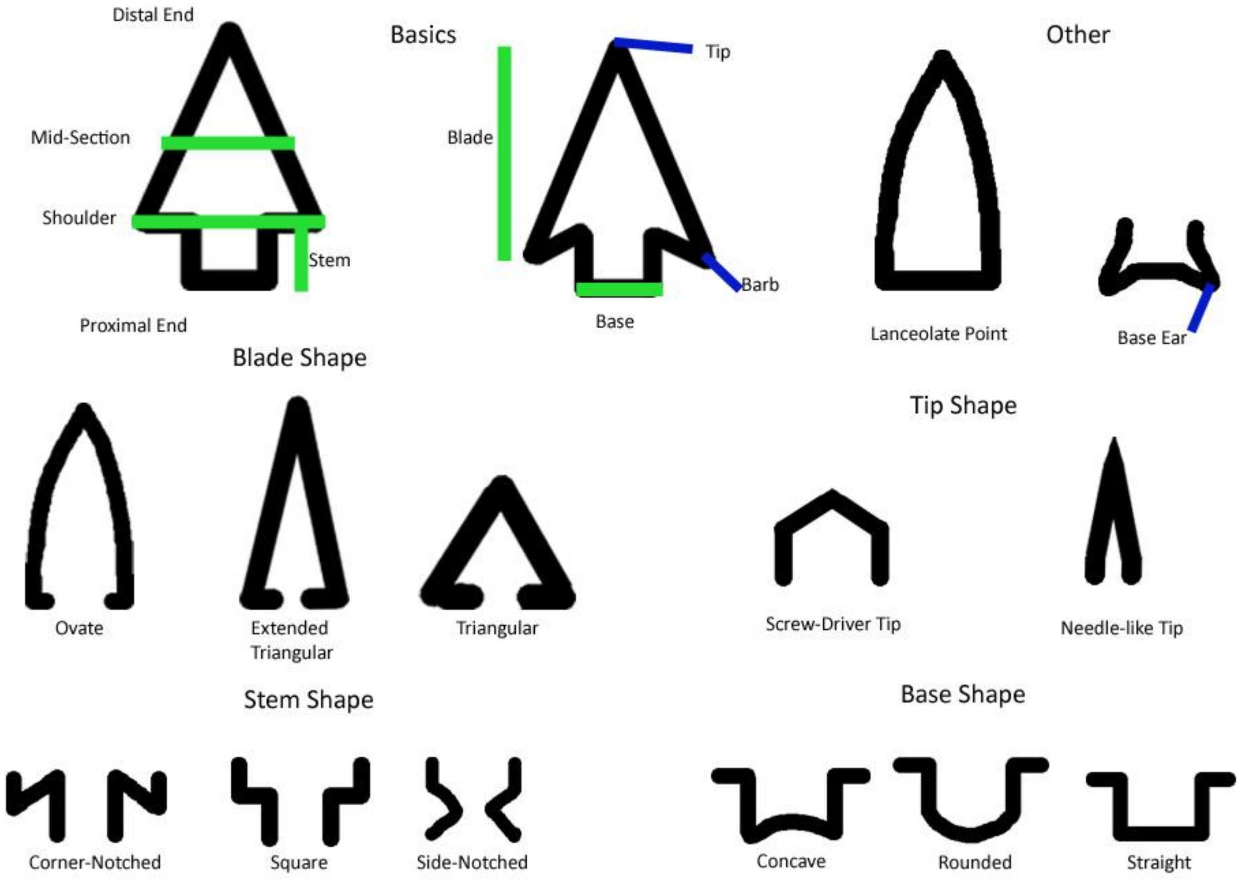



**Figure A.1: Terms Used in Type Descriptions.**

### Group A

Date: unknown

Description: A medium to small-sized, thick lanceolate point. It has a concave base that is thinned. The blade is circular so that these resemble, short, nubby versions of a longer and thinner lanceolate point.

Source: none

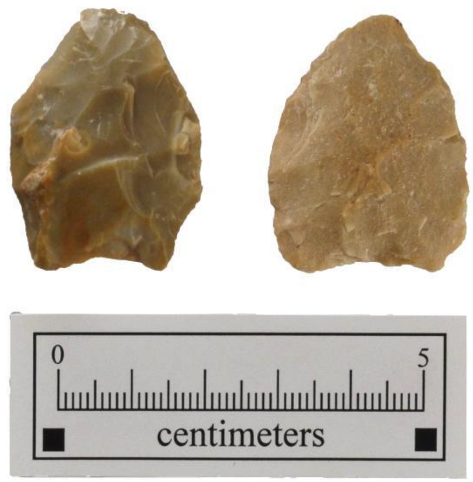



**Figure A.2: Group A: F2-41 and F2-98.**

### Abasolo

Date: Late Archaic-Woodland

Description: A medium to large, stem-less point.  It is roughly an extended-triangular blade with a rounded, semicircular base, which is often thinned.  It is this semi-circular base that distinguishes it from Tortuga points.  Because these generally lack retouch and are often crude in shape, it is possible that these are merely preforms.

Sources: Bell 1958:2

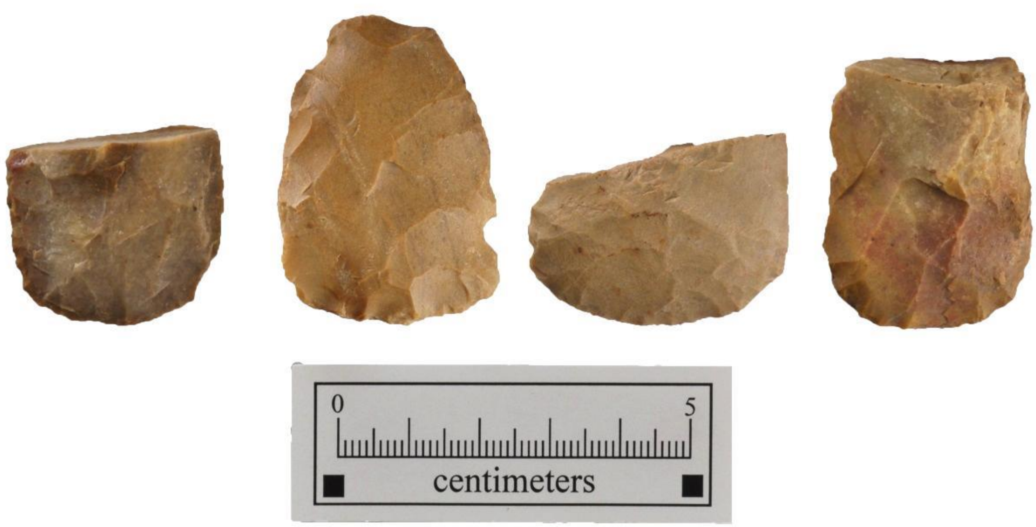



**Figure A.3: Abasolo: F2-50, PL8-39, PL8-52, PL8-53**

**Alba**

Date: Late Woodland

Description: A small triangular-shaped point that is corner-notched to stemmed. The stem is rectangular and base straight.

Sources: Bell 1958:8; Webb 1981:14; Williams and Brain 1983:221-222


**Figure A.4: Alba: F1-15, PL8-7, F1-265, F1-13, F1-82**

**Arkabutla**

Date: Paleoindian

Description: A medium-sized lanceolate point with long lateral flakes across both sides. The widest point is about half-way up the blade, and serves as an inflection point so that the blade is convex from the mid-section to the tip and concave from the mid-section to the base. The base is shallowly concave, thinned, and has small base ears.

Sources: McGahey 2000:25-26

**Group B**

Date: unknown

Description: A medium-sized point with a triangular, slightly excurvate blade. The shoulders are square and slightly barbed. The stem is contracting, and the base straight. There is fine retouch, and, generally, it is a very well-made point.

Sources: none

**Bayougoula Fishtailed**

Date: Late Woodland

Description: A small point with an extended triangular blade. The shoulders start about halfway up the length of the point. The stem is long and strongly contracts until it abruptly expands at the proximal end of the point. The base is concave, resembling a fish's tail with


**Figure A.5: Arkabutla: PL8-44**


**Figure A.6: Group B: 644-1, PL8-17, PL8-5, F3-2**


**Figure A.7: Bayougoula Fishtailed: F1-47, F1-45, F1-342**

pronounced base ears. Sources: Brookes, personal communication; McGahey 2000:204; Webb 1981:16; Williams and Brain 1983:222

**Benton**

Date: Middle Archaic

Description: A large to medium-sized point with a straight, somewhat long stem. The shoulders are square and narrow, and the blade ranges from parallel to ovate. Often times, this point is made out of diagnostic Fort Payne Chert.

Sources: McGahey 2000:108

**Group C**

Date: unknown

Description: A thick, generally crude, medium-sized point. The stem is long, wide, and square. The shoulders are narrow and generally square, although they may be asymmetrical in some examples. The bases are generally thinned and cortex is common. The blades are basically excurvate unless heavily resharpened, and the tip is slightly wide. The points are wider than Group D points and are much more robust and thick than Group F points. These may represent the Kent type described below.

Sources: none

**Carrollton**

Date: Late Archaic

Description: A short, medium-sized point with a rectangular stem and straight base. The shoulders are square and not barbed. Its characteristic blade is a symmetrical triangle that is well-made.

Sources: Bell 1958: 12; Webb 1981:10


**Figure A.8: Benton: PL10-3**


**Figure A.9: Group C: F5-35, F2-53, F5-31, F3-47, PL7-2, PL7-3**

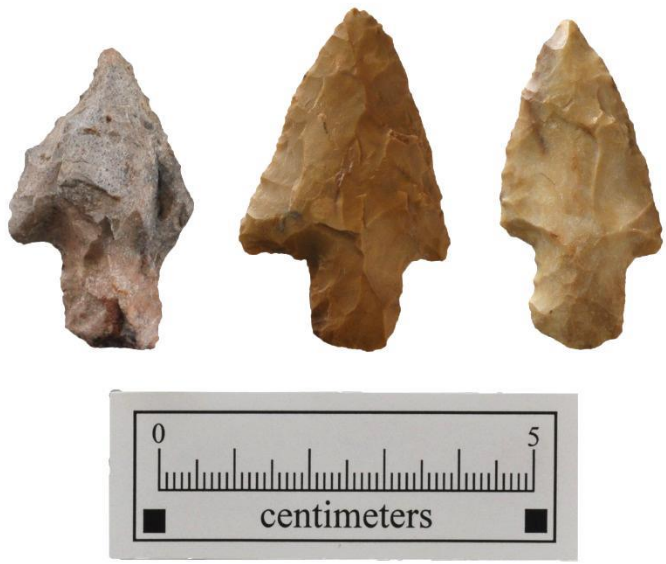



**Figure A.10: Carrollton: F3-11, F6-2, PL9-1**

## Catahoula

Date: Late Woodland

Description: A small triangular, corner-notched point that is strongly barbed. The barbs extend the length of the base. The base is generally straight but can be slightly rounded or concave. The blade is much larger relative to the stem than it would be for a Scallorn point.

Sources: Webb 1981:14


**Figure A.11: Catahoula: F1-16, F1-211, F1-140, F1-212, F1-4**

**Colbert**

Date: Late Woodland

Description: A small point with an extended triangular to incurvate blade that is somewhat serrated. These strongly resemble Scallorn points with their corner-notched stems except that the stems and bases are “fan-shaped.”

Sources: Webb 1981:16


**Figure A.12: Colbert: F1-257, F2-16, F1-38, F1-44, F1-99, F1-234, F1-23**

**Collins, *var. Claiborne***

Date: Late Woodland

Description: A long and relatively wide side-notched point. The base is usually straight but can be slightly concave or convex. The blades are parallel from the shoulders to the mid-section, at which point the edges turn ovate and form a wide tip. These points are generally more robust than their Collins counterpart.

Sources: McGahey 2000:198-200; Williams and Brain 1983:222-224

**Collins, *var. Clifton***

Date: Late Woodland

Description: A very small side-notched point with an isosceles triangular blade. The base is usually straight but can be slightly concave or rounded. These points may often be made out of exotic material and can also be exceptionally small.

Sources: McGahey 2000:198-200; Williams and Brain 1983: 222-225

**Collins, *var. Collins***

Date: Late Woodland

Description: A long, narrow, side-notched point whose blade comes to a slim needle-like tip. The base is usually straight but can be slightly contracting or slightly bulbous.

Sources: McGahey 2000:198-200; Williams and Brain 1983:222-224


**Figure A.13: Collins, *var. Claiborne*: 1386-1, F1-6, F1-259, 531-1, F1-29, F1-226, F1-91, F1-229, F1-52, F1-145**


**Figure A.14: Collins, *var. Clifton*: F1-363, F1-28, F1-246, F1-17, F1-26, S-2**

## Collins, *var. Serrated*

Date: Late Woodland

Description: A long, narrow, side-notched point whose blade comes to a slim needle-like tip. The base is usually straight but can be slightly contracting or slightly bulbous. These differ from Collins , *var. Collins* in that there are strong serrations extending from the shoulders to the tip.

Sources: McGahey 2000:198; Williams and Brain 1983:222-224


**Figure A.15: Collins, *var. Collins*: F1-354, F1-7, F1-227, F1-232, F1-133, F3-31, F1-127, F1-151, F1-153, F1-123, F5-1**

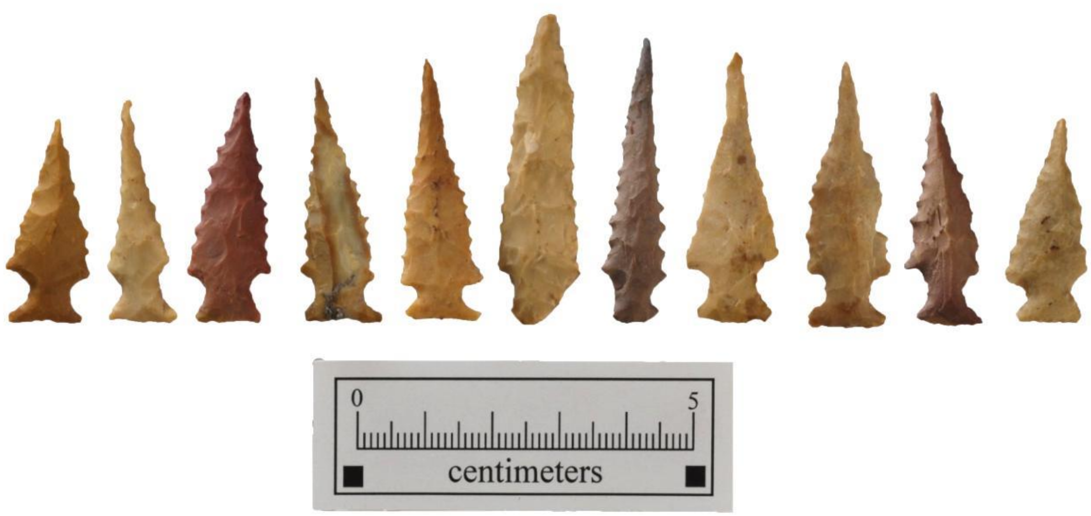



**Figure A.16: Collins, *var. Serrated*: F1-64, F1-48, F1-5, 614-1, F1-43, F1-174, F1-80, F1-46, F1-56, F1-61, F1-49**

**Collins, *var. Unspecified***

Date: Late Woodland

Description: These are small points that are generally side-notched with triangular to extended triangular blades. Many are fashioned from a reduction technique in which flakes are taken off around the sides first, so that the middle is thinned last, a process that Brookes and McGahey (2000) believe to be characteristic of Collins points. However, many of these points seem to be unfinished, so it is not possible to accurately place them into a variety of Collins.

Sources: Brookes, personal communication; McGahey 2000:198

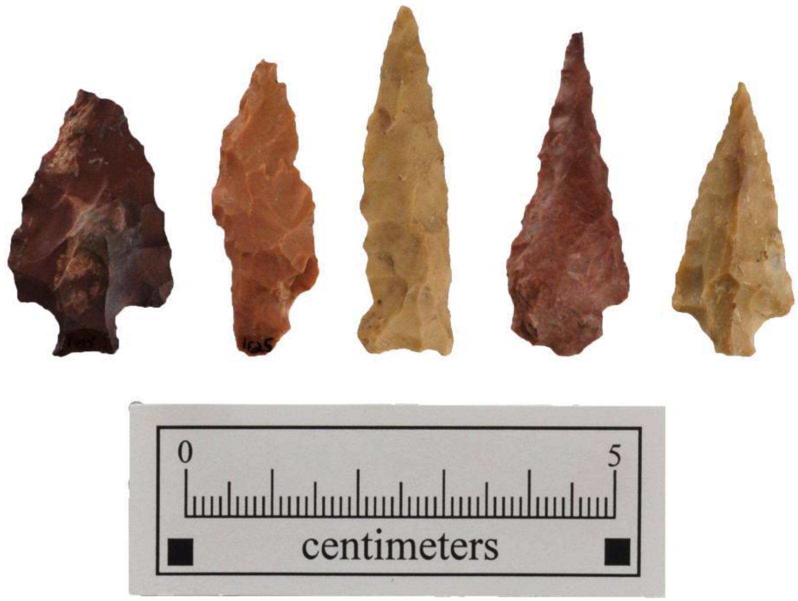



**Figure A.17: Collins, *var. Unspecified*: 1014-1, 1625-3, F1-87, F1-175, F1-185**

**Corner-Notched**

Date: Late Woodland

Description: This is not a point type, but rather it is an acknowledgement that these points have corner-notching similar to Alba, Colbert, and Scallorn. However, these small points are too broken to be adequately divided into these types.

Sources: none

**Cypress Creek**

Date: Middle Archaic

Description: A medium to large-sized point with a wide, rounded to triangular blade that is randomly flaked. The stem is slightly corner-notched and the shoulders narrow. The base is basically straight, though it may be slightly concave or slightly convex. The point is relatively thin compared to its width. McGahey (2000) distinguishes these into Variety I and Variety II, where Variety I is much larger. These points would generally fall into Variety I, though this distinction is not necessarily made in this study.

Sources: McGahey 2000:90

**Group D**

Date: unknown

Description: A medium-sized, thick, narrow point with narrow shoulders. The stem is generally long, straight, and square, although there are some cruder examples. The blade is extended and excurvate with attempts of lateral flaking. The bases can either be chunky, often with cortex remaining, or thinned. These are possibly resharpened or very crude attempts at creating a Pontchartrain point. These points


**Figure A.18: Cypress Creek: F5-19, F3-21, PL8-28**


**Figure A.19: Group D: F5-16, PL8-50, F2-60, PL9-3, PL8-57, F2-79, F3-42**

have a very robust quality that distinguishes them from Group F points and they are much narrower than Group C points.

Sources: none

**Dalton, *var. Carl***

Date: Paleoindian

Description: A side-notched point with a long, wide, extended triangular blade. The stem is very short and shoulders small. The base has small base ears and is shallowly concave. It has a strong resemblance to San Patrice varieties.

Sources: McGahey 2000:31-33


**Figure A.20: Dalton*, var. Carl*: PL9-6**

**Delhi**

Date: Late Archaic

Description: A medium to large-sized point with an extended triangular to ovate blade with fine retouch. Some resharpened examples have incurvate blades. The stem is relatively long, rectangular, and sometimes thinned, though the base is sometimes chunked off. Either way, the base is straight but sometimes is slightly convex. The characteristic shoulders have strong barbs produced from corner-notching.

Sources: McGahey 2000:180; Webb 1981:13

**Drill**

Date: unknown

Description: This is any sort of lithic that is fashioned into a very narrow tip that could be used to puncture holes into materials. Some are parallel-sided specimens with rounded bases,


**Figure A.21: Delhi: PL9-2, F5-27, F3-6, F2-10, F5-8**


**Figure A.22: Drill: F2-65, F1-183**

while others have broad, straight bases. The workmanship varies, as some may be crude and others finely-made.

Sources: none

**Group E**

Date: unknown

Description: These are medium- to small-sized points. They are narrow with very small shoulders with long stems that are square to roughly contracting. The blade is a short extended triangle and has very rough retouch. They have a thick cross-section with thin edges. These points are exceptionally crude and may represent attempts at making a Group D point because of the similarity in stems. Perhaps these were made by an amateur or child.

Sources: none


**Figure A.23: Group E: PL8-69, F3-62, F3-65, PL8-70**

**Edwards Stemmed, *var. Enola***

Date: Woodland

Description: A thin, medium-sized point with a very long extended triangular blade with crude retouch. It is corner-notched to stemmed and may be slightly barbed. The stem is slightly contracting, and the base is relatively straight and may be thinned, although some may be thick with cortex remaining. The blade is narrower and more extended than the Sunflower variety, and the stem is often more contracting.

Sources: McGahey 2000:194; Williams and Brain 1983:225-227

**Edwards Stemmed, *var. Sunflower***

Date: Mississippian

Description: A thin, medium-sized point with an extended triangular blade. There is crude retouch extending up both sides of the blade. It is corner-notched to square-stemmed. The shoulders are relatively square but may be slightly barbed or slightly sloping. Its stem is generally straight, and the base slightly rounded and thinned, though some have cortex remaining. Compared to Edwards, *var. Enola*, the blade is shorter and wider, and the stem is more parallel-sided.

Sources: McGahey 2000:194; Steponaitis, personal communication; Williams and Brain 1983:225-227

**Edwards Stemmed, *var. Unspecified***

Date: Woodland

Description: A medium-sized point with a crude, rectangular stem and roughly straight base that often has cortex remaining. The blade is extended triangular with crude retouch, and the shoulders square to sloping. They are crudely corner-notched to stemmed, and may have slight barbs, although most do not. These are points that could not be distinguished into the Enola or Sunflower varieties.

Sources: McGahey 2000:194; Williams and Brain 1983:225-227

**Group F**

Date: unknown

Description: A crude, medium-sized point with an extended ovate blade. The shoulders are square and very small with a rectangular stem. The base is thin and softly convex. Like Groups C and D, the base may be chunky with cortex or thinned. These points are thin, like Groups G and I, but they have a much rounder, wider quality. They resemble the Eden type except that they are far too crude.

Sources: Webb 1988:7 (for Eden type)


**Figure A.24: Group F: F3-35, 941-1, F3-40, F5-26**

**Group G**

Date: unknown

Description: These are thin, medium-sized points. The stems are straight, and bases rounded and generally thinned. The shoulders are square, although there is a great deal of asymmetry. The blades are extended triangular and may be slightly excurate, although some resharpened points are incurvate. These points are crude points and often have cortex on the bases, stems, and/or blade. They have narrower and more rounded stems than those in Group C and are generally more delicate and narrow than Groups C and D. These may represent the Edwards Stemmed type described above.

Sources: none


**Figure A.25: Group G: F5-10, PL8-25, PL8-23, F1-73, F1-76, PL8-15, PL8-77**

**Gary, *var. Gary***

Date: Late Archaic/Poverty Point

Description: A large point with a characteristic contracting stem and rounded to pointed base. The blade is roughly extended triangular and is rather crudely made. The shoulders are square but may be slightly sloping. However, there is much variation in this type.

Sources: McGahey 2000:144; Shambach 1998:55-56; Williams and Brain 1983:231

**Gary, *var. Malvern***

Date: Early Archaic

Description: A thick, medium to large point with a contracting stem that is wide relative to the blade. Thus, the shoulders are narrow and poorly-defined, and the blade is extended triangular to ovate. The base is rounded though it may be slightly straight.

Sources: Shambach 1998:56-57


**Figure A.26: Gary, *var. Gary*: F3-25, F2-13, PL8-86, F5-28, F2-33**


**Figure A.27: Gary, *var. Malvern*: PL8-26, F2-11**

**Gary, *var. Maybon***

Date: Middle Woodland

Description: A medium-sized point with a contracting stem that leads to a rounded or pointed base. The shoulders are relatively square, and the blade is generally extended triangular. These points are thinner and have wider shoulders than Gary, *var. Malvern*n. Like Gary, *var. Gary*, there is a lot of variation in this type.

Sources: McGahey 2000:144,192; Williams and Brain 1983:233


**Figure A.28: Gary, *var. Maybon*: 1515-1, PL8-41, F1-77, F2-63, F3-38, PL8-61**

**Group H**

Date: unknown

Description: A thin, medium-sized point that generally resembles Group G except that Group H points are corner-notched and barbed. Like Group G, the shoulders may be asymmetrical so that only one may show corner-notching. The stems are generally straight, although they may be slightly contracting. The bases are round and may be thinned or chunky with cortex. The blades are extended triangular and exhibit great retouch and crude serrations.

Sources: none

**Group I**

Date: unknown

Description: A thin, medium-sized point with a slightly contracting stem and roughly straight base. The blades are parallel to extended triangular and are very crude. The shoulders

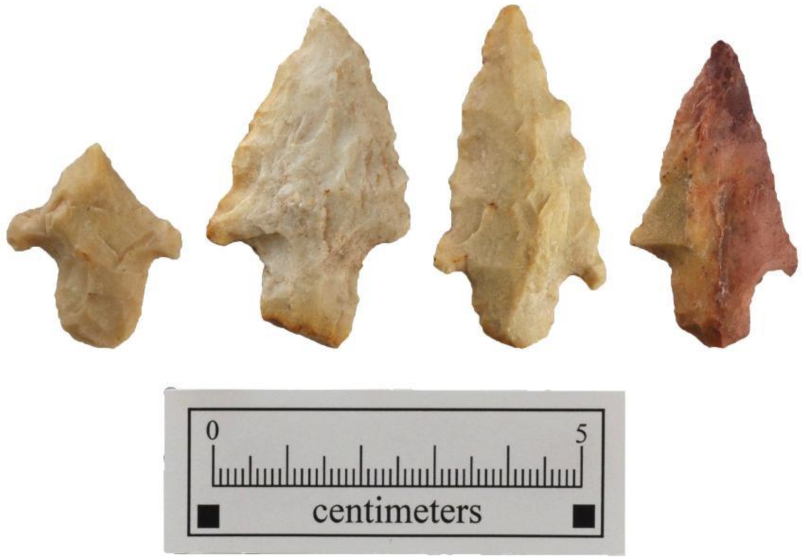



**Figure A.29: Group H: PL8-8, F5-9, PL7-5, PL8-93**


**Figure A.30: Group I: PL8-84, PL8-88, F3-57, PL8-66, PL9-17**

have almost slight barbs that may or may not be from retouch.  These points resemble Group G points except that Group I shoulders are much wider than those in Group G, giving these points a very flat, wide appearance.

Sources: none

**Johnson**

Date: Late Archaic

Description: A thin, broad, medium to large point with rounded to extended triangular blades.  The shoulders are narrow, with a wide, straight, short stem.  The base is weakly to strongly concave.

Sources: Shambach 1998:35-36


**Figure A.31: Johnson: PL8-38, F5-13, F5-11, F5-12**

**Kent**

Date: Late Archaic

Description:  A crude, thick point with a long, extended triangular blade.  There is often crude retouch on both sides of the blade.  It is slightly corner-notched with roughly square shoulders that generally are asymmetrical.  The stem is roughly rectangular, and the base is crudely straight and may be thinned or thick with cortex remaining.  It is thicker and more rounded in profile than Edwards Stemmed points

Sources: Bell 1960:60; McGahey 2000:163; Suhm and Krieger 1954:432; Williams and Brain 1983:233-234; Webb 1981:10

**Knife**

Date: unknown

Description: These are specimens that do not have distinctive shapes, although there may be some sort of hafting element near the base. Often, these are asymmetrical specimens with one concave and convex blade. One side of the blade often has fractures and use-wear from possible chopping or cutting.

Sources: none


**Figure A.32: Knives: F5-34, F2-62, F3-28**

**Macon**

Date: Late Archaic

Description: A medium to large-sized, heavy point with a long, straight stem with a straight base that is often thinned. The shoulders are broad and square with a triangular blade.

Sources: McGahey 2000:182; Webb 1981:13

**Madison**

Date: Late Woodland-Mississippian Period

Description: A small to medium-sized, stem-less point. It is a triangular to extended triangular point that is well-made and may have strong serrations on the edges. The base is generally straight but it may be slightly concave or slightly convex.

Sources: McGahey 2000:200; Webb 1981:16


**Figure A.33: Macon: F3-7**

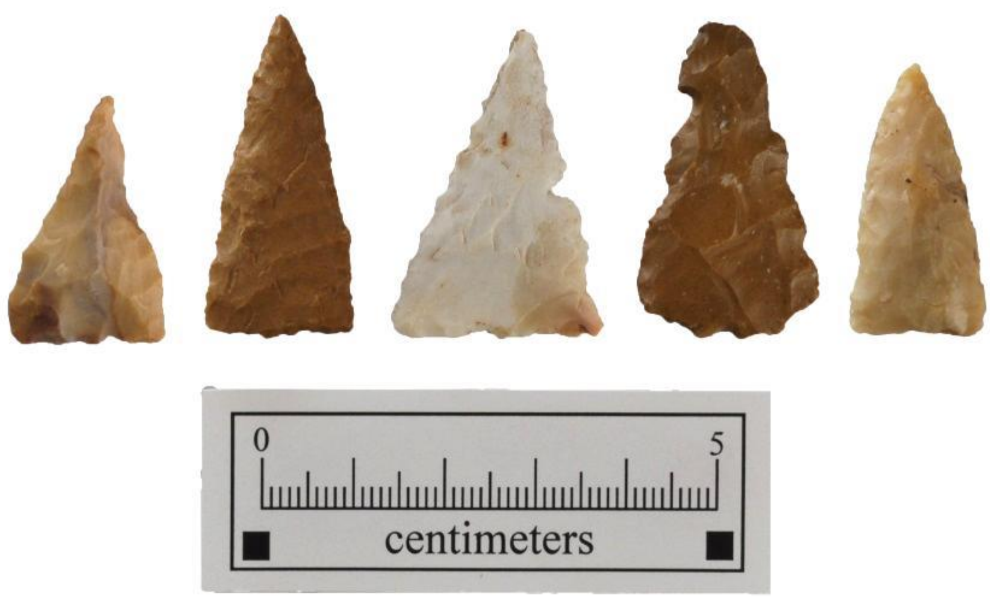



**Figure A.34: Madison: PL8-33, PL7-1, F1-109, F1-132, F1-12**

**Marcos**

Date: Late Archaic-Early Woodland

Description: A large, corner-notched point with strong barbs. The notching produces a distinct expanding stem, and the base may convex or straight. The blade is generally triangular to ovate.

Sources: Bell 1958:42; Webb 1981:11


**Figure A.35: Marcos: F2-38, 625-1, F5-18**

**Morris**

Date: Late Woodland

Description: This small point resembles Collins *var. Serrated* points in that they both are side-notched and have long, extended triangular blades. These blades are generally serrated and often come to a needle-like tip. Because of these strong similarities, Morris points may just be a variation on the Collins type. However, Morris points have a vertical notch on the base that is roughly the same size as the two side notches, making the base strongly concave.

Sources: Bell 1958:60

**Nodena, *var. Russell***

Date: Mississippian

Description: A small, stem-less point that has a roughly ovate shape. This variety is distinguished from other Nodena varieties because it has a roughly straight base. The workmanship is often crude, although some specimens can have fine retouch.

Sources: McGahey 2000:206


**Figure A.36: Morris: F1-19, F1-274, F1-68, S-7, F1-222**

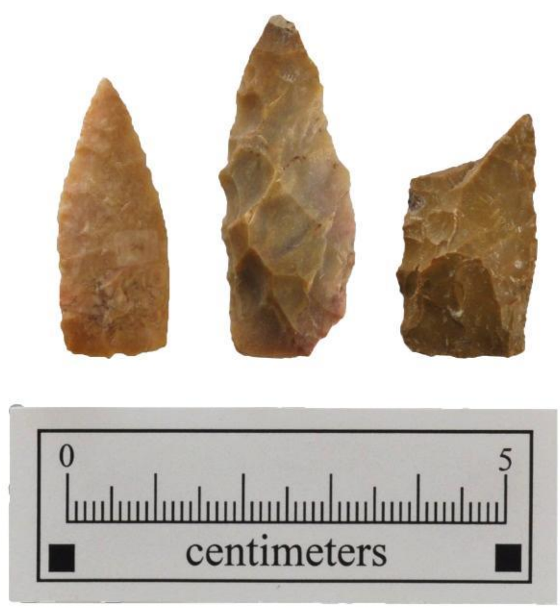



**Figure A.37: Nodena, *var. Russell*: F1-79, F3-43, F1-114**

**Opossum Bayou**

Date: Early Archaic

Description: A medium to large point with a roughly triangular to ovate blade. The stem is side-notched and softly expanding, although it may be somewhat corner-notched, so that the shoulders often show some resemblance of barbs. The base is generally convex, though some bases can be slightly straight to slightly concave. These points are often crude and thick.

Source: McGahey 2000:132


**Figure A.38: Opossum Bayou: PL8-54, F4-3, F3-36, F4-4, F5-3**

**Plainview**

Date: Paleoindian

Description: A parallel-sided lanceolate point with lateral flake scares across the blade. The sides may be slightly contracting from the mid-section. The base is concave and thinned. It does not have base ears.

Sources: Bell 1958:74; Webb 1981:4

**Pontchartrain**

Date: Late Archaic

Description: A thick, intricately-made dart point with a long blade that is roughly parallel-sided to extended triangular. A few examples have a curved blade so one side is convex and the other concave. It is corner-notched and may be slightly barbed. The stem is generally long and rectangular, though some are contracting. The base may be either thick with cortex remaining or rounded. The diagnostic characteristic is the fine retouch and/or serrations


**Figure A.39: Plainview: PL10-1**


**Figure A.40: Pontchartrain: F2-20, F2-7, F1-78, F6-1**

extending up both sides of the blade. Compared to Smithsonia, it is much thicker and more rounded in profile.

Sources: McGahey 2000:165-171; Webb 1981:9; Williams and Brain 1983:237-238

**Preform**

Date: unknown

Description: These are unfinished points. They are often thick, crude, and show some general outline of a point. However, they are not adequately formed, nor do they display any sign of fine retouch or advanced shaping. They cannot be classified into types because they are incomplete.

Sources: none


**Figure A.41: Preforms: 304-1, PL8-29, 31-1**

**San Patrice, *var. Leaf River***

Date: Paleoindian

Description: A medium-sized point with an extended triangular blade that is often serrated. It has strong base ears, which produce a concave base. The stem is short and slightly corner-notched, so that the shoulders are gently barbed. Compared to other varieties of San Patrice, it is corner-notched, small, thin, and more delicate.

Sources: McGahey 2000:36


**Figure A.42: San Patrice, *var. Leaf River*: F1-225**

**San Patrice, *var. St. John's***

Date: Paleoindian

Description: A medium-sized point with an extended triangular blade that is often serrated. The shoulders are very low, so the stem is short and roughly side-notched. The base is concave and has pronounced base ears. It is softly fluted, and one specimen (PL9-5) has drastically resharpened in the form of beveling.

Sources: McGahey 2000:33-34; Webb 1981:4

**San Patrice, *var. Unspecified***

Date: Paleoindian

Description: A medium-sized point with a triangular blade that may be extended. It has strong shoulders that may be up to halfway up the point. The stem is generally side-notched but may be parallel-sided. The base is concave and may or may not have base ears. However, one specimen (F6-3) has a straight base and may or may not be variety *Keithville*.

Sources: Bell 1958:84; McGahey 2000:33-36; Webb 1981:4

**Scallorn**

Date: Late Woodland

Description: A small, corner-notched point with strong barbs that extend no more than halfway down the stem. The stem is expanding, and the base varies from slightly convex to slightly concave. A few examples have a small notch in the base.

Sources: McGahey 2000:202; Webb 1981:15; Williams and Brain 1983:221-222

**Scraper**

Date: unknown

Description: These are not projectile points. They are often ovular-shaped specimens that are semi-circular in profile. One side of the specimen has a sharp edge that is formed at a


**Figure A.43: San Patrice, *var. St. John's*: PL9-5, F5-29**

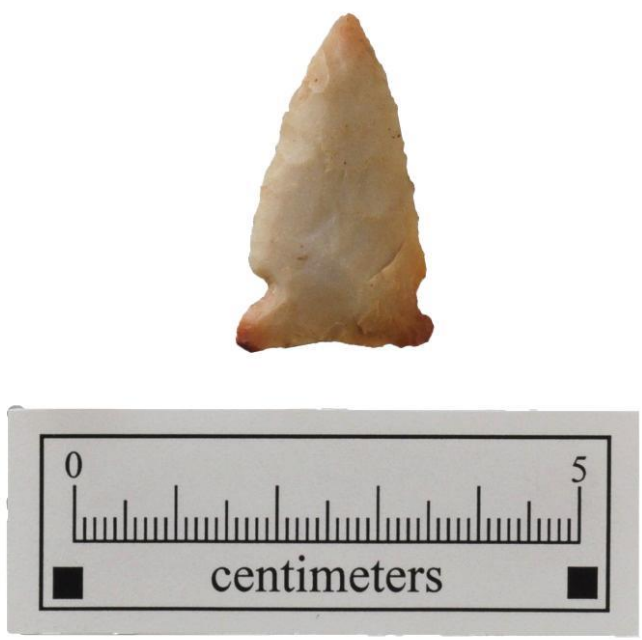



**Figure A.44: San Patrice, *var. Unspecified*: F6-3**


**Figure A.45: Scallorn: F1-37, 383-1, F1-39, F1-34, F1-50, 633-1, F1-18, F1-42, F1-81, F1-215, F1-400, F1-35**

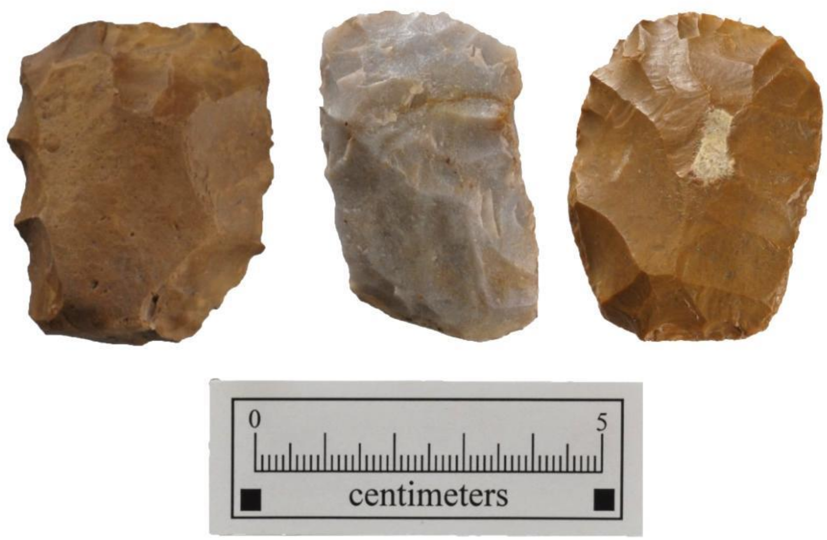



**Figure A.46: Scraper: F5-23, PL8-37, 846-3**

roughly 45-degree angle; this edge often has fractures and signs of use-wear. The ventral side of a scraper is often smooth and straight, while the dorsal side is often rounded. These may be crude with random flaking, or they may be well-formed and smoothed from extended use.

Sources: none

**Smithsonia**

Date: Late Archaic

Description: A thin, intricate, medium-sized point with an extended triangular blade. It is corner-notched and may be slightly barbed. The stem is rectangular though it may be slightly contracting and is sometimes long relative to the blade. The base is roughly rounded or may have cortex remaining. It has intricate retouch/serrations extending up both sides of the blade. Compared to Pontchartrain, it is thinner and more triangular in form.

Sources: McGahey 2000:173-174


**Figure A.47: Smithsonia: PL8-13, PL8-2, F5-2, F1-74, PL8-24**

**St. Tammany**

Date: Middle Archaic

Description: A large point with long, parallel sides that are very strongly serrated. The sides stop abruptly to form a diagnostic screw-driver tip. It is corner-notched to stemmed. The stem is usually wide relative to the blade and has a straight base, but the stems can also be narrow with a straight base, expanding with a straight base, bifurcate base, or rounded base.

Sources: Brookes *et al.*, 2011; McGahey 2000:124-128

**Tortuga**

Date: Late Archaic-Woodland

Description: A medium to large, stem-less point. It is roughly an extended-triangular blade with a roughly straight base, which may be thinned. It is this straight base that


**Figure A.48: St. Tammany. These are the five different stems seen among the St. Tammany points. From left to right is point F2-4 with a wide stem and expanding base; PL7-4 with a narrow stem and straight base; PL8-1 with a wide stem and straight base; F5-22 with a birfurcate base; and F2-48 with a rounded base.**


**Figure A.49: Tortuga: PL8-90, F3-19, F5-20, F2-36, PL8-36**

distinguishes it from Abasolo points.  Because these generally lack retouch and are often crude in shape, it is possible that these are merely preforms.

Sources: Bell 1958:2

**Wade**

Date:  Archaic

Description: A well-made medium-sized point.  The blade is generally a symmetrical triangular and is often not too large relation the stem.  It is strongly barbed, produced from corner-notching, so that the barbs may extend the length of the stem, which is long and rectangular.  The base is straight and may be thinned.

Sources: McGahey 2000:174

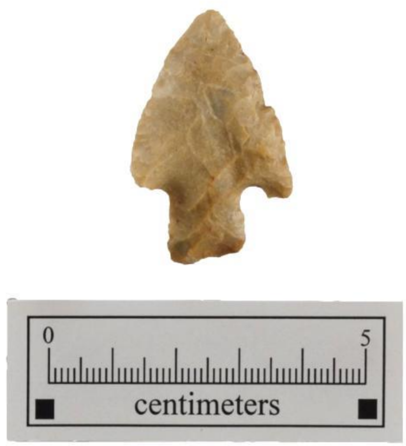



**Figure A.50: Wade: F2-70**

# Appendix B: List of Points

This section lists the points in the RLA, Prospere, and Frank's collections. The point numbers for Prospere and Frank are largely arbitrary, where the first part of the number refers to where/how the point was found. For point F1-2, "F1" means that Prospere found the point in Field 1 and the "2" means that it was the second point I labeled with "F1." The points labeled with "S"s were found by Frank. Because the RLA points were scientifically excavated, the points are numbered by their bag number. Point 1279-3, for example, is the third point from bag 1279. These tables are organized by time period so that the points with uncertain chronology are at the end. Each table is further organized by location and then point number. For an explanation of each location, see Chapter 1.

**Table B.1: Research Laboratories of Archaeology Point Collection**

| Time Period | Location | Bag Number | Type |
|---|---|---|---|
| Middle Archaic | Feltus | 1279-3 | St. Tammany with a wide, square base |
| Middle Woodland | Feltus | 1515-1 | Gary, *var. Maybon* |
| Late Woodland | Feltus | 249-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 383-1 | Scallorn |
| Late Woodland | Feltus | 436-2 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 531-1 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 614-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 633-1 | Scallorn |
| Late Woodland | Feltus | 644-2 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 681-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 691-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 848-3 | Collins, *var. Collins* |
| Late Woodland | Feltus | 869-2 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 941-2 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 1014-1 | Collins, *var. Unspecified* |
| Late Woodland | Feltus | 1386-1 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 1469-1 | Collins, *var. Unspecified* |
| Late Woodland | Feltus | 1623-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 1625-3 | Collins, *var. Unspecified* |
| Late Woodland | Feltus | 1801-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2001-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2504-1 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 2519-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2537-1 | Collins, *var. Serrated* |

**Table B.1: Research Laboratories of Archaeology Point Collection (continued).**

| Time Period | Location | Bag Number | Type |
|---|---|---|---|
| Late Woodland | Feltus | 2542-1 | Collins, *var. Unspecified* |
| Late Woodland | Feltus | 2542-2 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 2577-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2578-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2582-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2582-2 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2583-1 | Scallorn |
| Late Woodland | Feltus | 2593-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2593-2 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2595-3 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2617-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2617-3 | Collins, *var. Unspecified* |
| Late Woodland | Feltus | 2713-1 | Collins, *var. Collins* |
| Late Woodland | Feltus | 2817-1 | Collins, *var. Claiborne* |
| Late Woodland | Feltus | 2901-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2901-3 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 2901-2 | Scallorn |
| Late Woodland | Feltus | 2968-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 3007-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 3106-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | 469a-1 | Collins, *var. Unspecified* |
| Unknown | Feltus | 2-1 | Scraper |
| Unknown | Feltus | 2-1 | Scraper |
| Unknown | Feltus | 3-1 | Scraper |
| Unknown | Feltus | 4-1 | Unclassified |
| Unknown | Feltus | 5-1 | Scraper |
| Unknown | Feltus | 7-1 | Preform |
| Unknown | Feltus | 27-1 | Preform |
| Unknown | Feltus | 27-1 | Unclassified |
| Unknown | Feltus | 27-1 | Unclassified |
| Unknown | Feltus | 31-1 | Preform |
| Unknown | Feltus | 53-1 | Scraper |
| Unknown | Feltus | 91-1 | Scraper |
| Unknown | Feltus | 104-1 | Scraper |
| Unknown | Feltus | 304-1 | Preform |
| Unknown | Feltus | 304-2 | Drill |
| Unknown | Feltus | 329-1 | Scraper |
| Unknown | Feltus | 330-1 | Drill |
| Unknown | Feltus | 417-1 | Preform |
| Unknown | Feltus | 436-1 | Unclassified |
| Unknown | Feltus | 448-1 | Unclassified |
| Unknown | Feltus | 618-1 | Preform |
| Unknown | Feltus | 618-2 | Scraper |
| Unknown | Feltus | 625-1 | Marcos |
| Unknown | Feltus | 644-1 | Group B |
| Unknown | Feltus | 668-1 | Scraper |
| Unknown | Feltus | 721-1 | Preform |
| Unknown | Feltus | 721-2 | Nodena, *var. Russell* |
| Unknown | Feltus | 721-3 | Unclassified |
| Unknown | Feltus | 721-4 | Unclassified |
| Unknown | Feltus | 722-1 | Unclassified |
| Unknown | Feltus | 845-1 | Unclassified |
| Unknown | Feltus | 846-1 | Knife |

Table B.1: Research Laboratories of Archaeology Point Collection (continued).

| Time Period | Location | Bag Number | Type |
|---|---|---|---|
| Unknown | Feltus | 846-2 | Unclassified |
| Unknown | Feltus | 846-3 | Scraper |
| Unknown | Feltus | 848-1 | Unclassified |
| Unknown | Feltus | 848-2 | Unclassified |
| Unknown | Feltus | 868-1 | Unclassified |
| Unknown | Feltus | 869-1 | Preform |
| Unknown | Feltus | 939-1 | Preform |
| Unknown | Feltus | 941-1 | Group F |
| Unknown | Feltus | 1098-1 | Scraper |
| Unknown | Feltus | 1186-1 | Unclassified |
| Unknown | Feltus | 1188-1 | Preform |
| Unknown | Feltus | 1189-1 | Scraper |
| Unknown | Feltus | 1228-1 | Unclassified |
| Unknown | Feltus | 1279-1 | Preform |
| Unknown | Feltus | 1279-2 | Preform |
| Unknown | Feltus | 1331-1 | Unclassified |
| Unknown | Feltus | 1364-1 | Preform |
| Unknown | Feltus | 1517-1 | Scraper |
| Unknown | Feltus | 1602-1 | Unclassified |
| Unknown | Feltus | 1606-1 | Madison |
| Unknown | Feltus | 1609-1 | Preform |
| Unknown | Feltus | 1621-1 | Unclassified |
| Unknown | Feltus | 1625-1 | Preform |
| Unknown | Feltus | 1625-2 | Preform |
| Unknown | Feltus | 1628-1 | Preform |
| Unknown | Feltus | 1644-1 | Scraper |
| Unknown | Feltus | 1658-1 | Unclassified |
| Unknown | Feltus | 1674-1 | Scraper |
| Unknown | Feltus | 2529-1 | Preform |
| Unknown | Feltus | 2583-2 | Preform |
| Unknown | Feltus | 2583-3 | Preform |
| Unknown | Feltus | 2595-1 | Preform |
| Unknown | Feltus | 2595-2 | Unclassified |
| Unknown | Feltus | 2608-1 | Drill |
| Unknown | Feltus | 2617-2 | Preform |
| Unknown | Feltus | 2630-1 | Preform |
| Unknown | Feltus | 2630-2 | Preform |
| Unknown | Feltus | 2723-1 | Unclassified |
| Unknown | Feltus | 2745-1 | Preform |
| Unknown | Feltus | 2810-1 | Preform |
| Unknown | Feltus | 2959-1 | Preform |
| Unknown | Feltus | P-30, 1994-1 | Scraper |

**Table B.2: Prospere Point Collection**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Paleoindian | Field 1/Feltus | F1-225 | San Patrice, *var. Leaf River* |
| Paleoindian | Field 5 | F5-29 | San Patrice, *var. St. John's* |
| Paleoindian | Field 6 | F6-3 | San Patrice, *var. Keithville* |
| Paleoindian | Pumpkin Lake 8 | PL8-44 | Arkabutla |
| Paleoindian | Pumpkin Lake 9 | PL9-5 | San Patrice, *var. St. John's* |
| Paleoindian | Pumpkin Lake 9 | PL9-6 | Dalton |
| Paleoindian | Pumpkin Lake 10 | PL10-1 | Plainview |
| Middle Archaic | Field 1/Feltus | F1-156 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-1 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-2 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-3 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-4 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-5 | St. Tammany with a narrow, square stem |
| Middle Archaic | Field 2 | F2-8 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-9 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-12 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-18 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-21 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-22 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-23 | Cypress Creek |
| Middle Archaic | Field 2 | F2-24 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-25 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-26 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-27 | St. Tammany |
| Middle Archaic | Field 2 | F2-28 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-29 | Cypress Creek |
| Middle Archaic | Field 2 | F2-30 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-31 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-34 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-35 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-37 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-39 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-40 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-43 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-45 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-46 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-47 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-48 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-51 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-52 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-54 | St. Tammany |
| Middle Archaic | Field 2 | F2-55 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-64 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-75 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-80 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-81 | St. Tammany with an expanding stem |
| Middle Archaic | Field 2 | F2-85 | St. Tammany |
| Middle Archaic | Field 2 | F2-87 | St. Tammany with a bifurcate stem |
| Middle Archaic | Field 2 | F2-89 | St. Tammany with a wide, square base |
| Middle Archaic | Field 2 | F2-90 | St. Tammany |
| Middle Archaic | Field 2 | F2-91 | St. Tammany with a rounded base |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Middle Archaic | Field 2 | F2-92 | St. Tammany |
| Middle Archaic | Field 2 | F2-97 | St. Tammany with a rounded base |
| Middle Archaic | Field 2 | F2-102 | St. Tammany with an expanding stem |
| Middle Archaic | Field 3 | F3-1 | St. Tammany with a wide, square base |
| Middle Archaic | Field 3 | F3-13 | Opossum Bayou |
| Middle Archaic | Field 3 | F3-20 | St. Tammany with a narrow, square stem |
| Middle Archaic | Field 3 | F3-21 | Cypress Creek |
| Middle Archaic | Field 3 | F3-30 | Opossum Bayou |
| Middle Archaic | Field 3 | F3-36 | Opossum Bayou |
| Middle Archaic | Field 3 | F3-37 | St. Tammany with a rounded base |
| Middle Archaic | Field 3 | F3-41 | St. Tammany |
| Middle Archaic | Field 3 | F3-58 | St. Tammany |
| Middle Archaic | Field 4 | F4-3 | Opossum Bayou |
| Middle Archaic | Field 4 | F4-4 | Opossum Bayou |
| Middle Archaic | Field 5 | F5-3 | Opossum Bayou |
| Middle Archaic | Field 5 | F5-4 | St. Tammany with a wide, square base |
| Middle Archaic | Field 5 | F5-6 | St. Tammany with an expanding stem |
| Middle Archaic | Field 5 | F5-7 | St. Tammany with a wide, square base |
| Middle Archaic | Field 5 | F5-19 | Cypress Creek |
| Middle Archaic | Field 5 | F5-22 | St. Tammany with a bifurcate stem |
| Middle Archaic | Field 5 | F5-25 | St. Tammany |
| Middle Archaic | Field 6 | F6-4 | St. Tammany with an expanding stem |
| Middle Archaic | Pumpkin Lake 7 | PL7-4 | St. Tammany with a narrow, square stem |
| Middle Archaic | Pumpkin Lake 8 | PL8-1 | St. Tammany with a wide, square base |
| Middle Archaic | Pumpkin Lake 8 | PL8-28 | Cypress Creek |
| Middle Archaic | Pumpkin Lake 8 | PL8-47 | Cypress Creek |
| Middle Archaic | Pumpkin Lake 8 | PL8-49 | St. Tammany |
| Middle Archaic | Pumpkin Lake 8 | PL8-51 | St. Tammany with a wide, square base |
| Middle Archaic | Pumpkin Lake 8 | PL8-54 | Opossum Bayou |
| Middle Archaic | Pumpkin Lake 8 | PL8-63 | St. Tammany |
| Middle Archaic | Pumpkin Lake 8 | PL8-75 | St. Tammany |
| Middle Archaic | Pumpkin Lake 8 | PL8-76 | St. Tammany |
| Middle Archaic | Pumpkin Lake 8 | PL8-81 | St. Tammany |
| Middle Archaic | Pumpkin Lake 9 | PL9-7 | St. Tammany with a wide, square base |
| Middle Archaic | Pumpkin Lake 9 | PL9-9 | St. Tammany with an expanding stem |
| Middle Archaic | Pumpkin Lake 9 | PL9-14 | St. Tammany |
| Middle Archaic | Pumpkin Lake 10 | PL10-3 | Benton |
| Late Archaic | Field 1/Feltus | F1-74 | Smithsonia |
| Late Archaic | Field 1/Feltus | F1-78 | Pontchartrain |
| Late Archaic | Field 2 | F2-7 | Pontchartrain |
| Late Archaic | Field 2 | F2-10 | Delhi |
| Late Archaic | Field 2 | F2-13 | Gary, *var. Gary* |
| Late Archaic | Field 2 | F2-19 | Delhi |
| Late Archaic | Field 2 | F2-20 | Pontchartrain |
| Late Archaic | Field 2 | F2-33 | Gary, *var. Gary* |
| Late Archaic | Field 2 | F2-70 | Wade |
| Late Archaic | Field 3 | F3-6 | Delhi |
| Late Archaic | Field 3 | F3-7 | Macon |
| Late Archaic | Field 3 | F3-11 | Carrollton |
| Late Archaic | Field 3 | F3-25 | Gary, *var. Gary* |
| Late Archaic | Field 3 | F3-59 | Smithsonia |
| Late Archaic | Field 3 | F3-66 | Delhi |
| Late Archaic | Field 4 | F4-1 | Johnson |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Archaic | Field 5 | F5-2 | Smithsonia |
| Late Archaic | Field 5 | F5-8 | Delhi |
| Late Archaic | Field 5 | F5-11 | Johnson |
| Late Archaic | Field 5 | F5-12 | Johnson |
| Late Archaic | Field 5 | F5-13 | Johnson |
| Late Archaic | Field 5 | F5-15 | Delhi |
| Late Archaic | Field 5 | F5-24 | Delhi |
| Late Archaic | Field 5 | F5-27 | Delhi |
| Late Archaic | Field 5 | F5-28 | Gary, *var. Gary* |
| Late Archaic | Field 6 | F6-1 | Pontchartrain |
| Late Archaic | Field 6 | F6-2 | Carrollton |
| Late Archaic | Pumpkin Lake 8 | PL8-2 | Smithsonia |
| Late Archaic | Pumpkin Lake 8 | PL8-4 | Smithsonia |
| Late Archaic | Pumpkin Lake 8 | PL8-12 | Smithsonia |
| Late Archaic | Pumpkin Lake 8 | PL8-13 | Smithsonia |
| Late Archaic | Pumpkin Lake 8 | PL8-24 | Smithsonia |
| Late Archaic | Pumpkin Lake 8 | PL8-38 | Johnson |
| Late Archaic | Pumpkin Lake 8 | PL8-86 | Gary, *var. Gary* |
| Late Archaic | Pumpkin Lake 9 | PL9-1 | Carrollton |
| Late Archaic | Pumpkin Lake 9 | PL9-2 | Delhi |
| Early Woodland | Field 2 | F2-11 | Gary, *var. Malvern* |
| Early Woodland | Pumpkin Lake 8 | PL8-26 | Gary, *var. Malvern* |
| Middle Woodland | Field 1/Feltus | F1-77 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-6 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-42 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-49 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-63 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-66 | Gary, *var. Maybon* |
| Middle Woodland | Field 2 | F2-78 | Gary, *var. Maybon* |
| Middle Woodland | Field 3 | F3-26 | Gary, *var. Maybon* |
| Middle Woodland | Field 3 | F3-32 | Gary, *var. Maybon* |
| Middle Woodland | Field 3 | F3-38 | Gary, *var. Maybon* |
| Middle Woodland | Field 3 | F3-46 | Gary, *var. Maybon* |
| Middle Woodland | Field 3 | F3-52 | Gary, *var. Maybon* |
| Middle Woodland | Field 4 | F4-2 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-19 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-31 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-41 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-45 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-59 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-61 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-65 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-71 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-72 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-73 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-87 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-95 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 8 | PL8-97 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 9 | PL9-4 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 9 | PL9-11 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 9 | PL9-13 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 9 | PL9-16 | Gary, *var. Maybon* |
| Middle Woodland | Pumpkin Lake 9 | PL9-18 | Gary, *var. Maybon* |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-1 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-2 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-3 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-4 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-5 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-6 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-7 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-8 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-9 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-10 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-11 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-13 | Alba |
| Late Woodland | Field 1/Feltus | F1-14 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-15 | Alba |
| Late Woodland | Field 1/Feltus | F1-16 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-17 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-18 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-19 | Morris |
| Late Woodland | Field 1/Feltus | F1-20 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-21 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-22 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-23 | Colbert |
| Late Woodland | Field 1/Feltus | F1-24 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-25 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-26 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-27 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-28 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-29 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-31 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-32 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-33 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-34 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-35 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-36 | Colbert |
| Late Woodland | Field 1/Feltus | F1-37 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-38 | Colbert |
| Late Woodland | Field 1/Feltus | F1-39 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-40 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-41 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-42 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-43 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-44 | Colbert |
| Late Woodland | Field 1/Feltus | F1-45 | Bayougoula Fishtailed |
| Late Woodland | Field 1/Feltus | F1-46 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-47 | Bayougoula Fishtailed |
| Late Woodland | Field 1/Feltus | F1-48 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-49 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-50 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-52 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-53 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-54 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-56 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-57 | Collins, *var. Serrated* |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-58 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-59 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-60 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-61 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-62 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-63 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-64 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-65 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-66 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-67 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-68 | Morris |
| Late Woodland | Field 1/Feltus | F1-69 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-70 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-71 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-80 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-81 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-82 | Alba |
| Late Woodland | Field 1/Feltus | F1-87 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-88 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-89 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-90 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-91 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-93 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-98 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-99 | Colbert |
| Late Woodland | Field 1/Feltus | F1-100 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-102 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-103 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-104 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-106 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-107 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-111 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-112 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-115 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-116 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-117 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-118 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-119 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-120 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-122 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-123 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-125 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-126 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-127 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-128 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-130 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-133 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-138 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-139 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-140 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-141 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-142 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-143 | Collins, *var. Claiborne* |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-144 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-145 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-146 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-147 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-148 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-151 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-153 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-158 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-160 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-161 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-163 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-164 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-166 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-168 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-169 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-170 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-171 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-174 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-175 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-182 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-185 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-186 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-187 | Colbert |
| Late Woodland | Field 1/Feltus | F1-188 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-189 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-190 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-191 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-192 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-193 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-195 | Colbert |
| Late Woodland | Field 1/Feltus | F1-196 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-197 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-198 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-199 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-202 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-203 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-204 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-206 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-207 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-208 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-210 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-211 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-212 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-213 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-214 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-215 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-216 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-217 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-218 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-219 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-221 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-222 | Morris |
| Late Woodland | Field 1/Feltus | F1-223 | Collins, *var. Serrated* |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-226 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-227 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-229 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-230 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-232 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-233 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-234 | Colbert |
| Late Woodland | Field 1/Feltus | F1-236 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-237 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-238 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-241 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-242 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-243 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-244 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-245 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-246 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-247 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-248 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-249 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-250 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-251 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-253 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-254 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-255 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-256 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-257 | Colbert |
| Late Woodland | Field 1/Feltus | F1-258 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-259 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-260 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-261 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-262 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-263 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-264 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-265 | Alba |
| Late Woodland | Field 1/Feltus | F1-266 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-267 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-268 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-269 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-270 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-271 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-273 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-274 | Morris |
| Late Woodland | Field 1/Feltus | F1-275 | Morris |
| Late Woodland | Field 1/Feltus | F1-276 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-277 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-278 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-281 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-282 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-284 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-286 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-287 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-288 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-289 | Scallorn |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-290 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-291 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-292 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-293 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-294 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-296 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-297 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-298 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-299 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-300 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-301 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-302 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-303 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-304 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-305 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-306 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-308 | Catahoula |
| Late Woodland | Field 1/Feltus | F1-310 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-312 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-313 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-314 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-315 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-316 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-317 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-319 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-321 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-323 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-325 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-327 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-329 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-330 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-332 | Morris |
| Late Woodland | Field 1/Feltus | F1-334 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-335 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-336 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-337 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-338 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-340 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-341 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-342 | Bayougoula Fishtailed |
| Late Woodland | Field 1/Feltus | F1-343 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-344 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-345 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-346 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-347 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-350 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-351 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-353 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-354 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-355 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-356 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-357 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-358 | Collins, *var. Serrated* |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 1/Feltus | F1-359 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-360 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-361 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-363 | Collins, *var. Clifton* |
| Late Woodland | Field 1/Feltus | F1-364 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-365 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-366 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-367 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-368 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-369 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-370 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-372 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-373 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-375 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-376 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-378 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-379 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-382 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-383 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-384 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-385 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-386 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-387 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-388 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-389 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-390 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-393 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-394 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-395 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-396 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-397 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-399 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-400 | Scallorn |
| Late Woodland | Field 1/Feltus | F1-401 | Corner-Notched |
| Late Woodland | Field 1/Feltus | F1-402 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-405 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-407 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-408 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-409 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-410 | Collins, *var. Claiborne* |
| Late Woodland | Field 1/Feltus | F1-411 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-412 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-414 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-415 | Collins, *var. Unspecified* |
| Late Woodland | Field 1/Feltus | F1-416 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-417 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-418 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-419 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-420 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-423 | Collins, *var. Serrated* |
| Late Woodland | Field 1/Feltus | F1-424 | Collins, *var. Collins* |
| Late Woodland | Field 1/Feltus | F1-425 | Collins, *var. Collins* |
| Late Woodland | Field 2 | F2-14 | Corner-Notched |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Late Woodland | Field 2 | F2-15 | Scallorn |
| Late Woodland | Field 2 | F2-16 | Colbert |
| Late Woodland | Field 2 | F2-17 | Collins, *var. Serrated* |
| Late Woodland | Field 2 | F2-67 | Corner-Notched |
| Late Woodland | Field 2 | F2-100 | Collins, *var. Clifton* |
| Late Woodland | Field 3 | F3-3 | Corner-Notched |
| Late Woodland | Field 3 | F3-4 | Colbert |
| Late Woodland | Field 3 | F3-5 | Scallorn |
| Late Woodland | Field 3 | F3-24 | Collins, *var. Serrated* |
| Late Woodland | Field 3 | F3-31 | Collins, *var. Collins* |
| Late Woodland | Field 3 | F3-45 | Collins, *var. Serrated* |
| Late Woodland | Field 5 | F5-1 | Collins, *var. Collins* |
| Late Woodland | Pumpkin Lake 8 | PL8-6 | Corner-Notched |
| Late Woodland | Pumpkin Lake 8 | PL8-7 | Alba |
| Late Woodland | Pumpkin Lake 8 | PL8-30 | Collins, *var. Serrated* |
| Late Woodland | Pumpkin Lake 8 | PL8-32 | Collins, *var. Serrated* |
| Late Woodland | Pumpkin Lake 8 | PL8-83 | Collins, *var. Serrated* |
| Late Woodland | Pumpkin Lake 8 | PL8-85 | Corner-Notched |
| Late Woodland | Pumpkin Lake 8 | PL8-96 | Corner-Notched |
| Mississippian | Field 1/Feltus | F1-79 | Nodena, *var. Russell* |
| Mississippian | Field 1/Feltus | F1-114 | Nodena, *var. Russell* |
| Mississippian | Field 3 | F3-16 | Nodena, *var. Russell* |
| Mississippian | Field 3 | F3-43 | Nodena, *var. Russell* |
| Unknown | Field 1/Feltus | F1-12 | Madison |
| Unknown | Field 1/Feltus | F1-30 | Unclassified |
| Unknown | Field 1/Feltus | F1-51 | Unclassified |
| Unknown | Field 1/Feltus | F1-55 | Unclassified |
| Unknown | Field 1/Feltus | F1-72 | Group G |
| Unknown | Field 1/Feltus | F1-73 | Group G |
| Unknown | Field 1/Feltus | F1-75 | Group G |
| Unknown | Field 1/Feltus | F1-76 | Group G |
| Unknown | Field 1/Feltus | F1-83 | Preform |
| Unknown | Field 1/Feltus | F1-84 | Knife |
| Unknown | Field 1/Feltus | F1-85 | Unclassified |
| Unknown | Field 1/Feltus | F1-86 | Unclassified |
| Unknown | Field 1/Feltus | F1-92 | Unclassified |
| Unknown | Field 1/Feltus | F1-94 | Unclassified |
| Unknown | Field 1/Feltus | F1-95 | Unclassified |
| Unknown | Field 1/Feltus | F1-96 | Unclassified |
| Unknown | Field 1/Feltus | F1-97 | Unclassified |
| Unknown | Field 1/Feltus | F1-101 | Unclassified |
| Unknown | Field 1/Feltus | F1-105 | Unclassified |
| Unknown | Field 1/Feltus | F1-108 | Unclassified |
| Unknown | Field 1/Feltus | F1-109 | Madison |
| Unknown | Field 1/Feltus | F1-110 | Drill |
| Unknown | Field 1/Feltus | F1-113 | Unclassified |
| Unknown | Field 1/Feltus | F1-121 | Unclassified |
| Unknown | Field 1/Feltus | F1-124 | Madison |
| Unknown | Field 1/Feltus | F1-129 | Unclassified |
| Unknown | Field 1/Feltus | F1-131 | Unclassified |
| Unknown | Field 1/Feltus | F1-132 | Madison |
| Unknown | Field 1/Feltus | F1-134 | Unclassified |
| Unknown | Field 1/Feltus | F1-135 | Unclassified |

Table B.2: Prospere Point Collection (continued).

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Unknown | Field 1/Feltus | F1-136 | Unclassified |
| Unknown | Field 1/Feltus | F1-137 | Unclassified |
| Unknown | Field 1/Feltus | F1-149 | Unclassified |
| Unknown | Field 1/Feltus | F1-150 | Unclassified |
| Unknown | Field 1/Feltus | F1-152 | Unclassified |
| Unknown | Field 1/Feltus | F1-154 | Unclassified |
| Unknown | Field 1/Feltus | F1-155 | Unclassified |
| Unknown | Field 1/Feltus | F1-157 | Unclassified |
| Unknown | Field 1/Feltus | F1-159 | Unclassified |
| Unknown | Field 1/Feltus | F1-162 | Unclassified |
| Unknown | Field 1/Feltus | F1-165 | Unclassified |
| Unknown | Field 1/Feltus | F1-167 | Unclassified |
| Unknown | Field 1/Feltus | F1-172 | Group C |
| Unknown | Field 1/Feltus | F1-173 | Unclassified |
| Unknown | Field 1/Feltus | F1-176 | Unclassified |
| Unknown | Field 1/Feltus | F1-177 | Unclassified |
| Unknown | Field 1/Feltus | F1-178 | Unclassified |
| Unknown | Field 1/Feltus | F1-179 | Unclassified |
| Unknown | Field 1/Feltus | F1-180 | Unclassified |
| Unknown | Field 1/Feltus | F1-181 | Unclassified |
| Unknown | Field 1/Feltus | F1-183 | Drill |
| Unknown | Field 1/Feltus | F1-184 | Unclassified |
| Unknown | Field 1/Feltus | F1-194 | Unclassified |
| Unknown | Field 1/Feltus | F1-200 | Unclassified |
| Unknown | Field 1/Feltus | F1-201 | Unclassified |
| Unknown | Field 1/Feltus | F1-205 | Unclassified |
| Unknown | Field 1/Feltus | F1-209 | Unclassified |
| Unknown | Field 1/Feltus | F1-220 | Unclassified |
| Unknown | Field 1/Feltus | F1-224 | Unclassified |
| Unknown | Field 1/Feltus | F1-228 | Unclassified |
| Unknown | Field 1/Feltus | F1-231 | Unclassified |
| Unknown | Field 1/Feltus | F1-235 | Unclassified |
| Unknown | Field 1/Feltus | F1-239 | Unclassified |
| Unknown | Field 1/Feltus | F1-240 | Unclassified |
| Unknown | Field 1/Feltus | F1-252 | Unclassified |
| Unknown | Field 1/Feltus | F1-272 | Unclassified |
| Unknown | Field 1/Feltus | F1-279 | Unclassified |
| Unknown | Field 1/Feltus | F1-280 | Unclassified |
| Unknown | Field 1/Feltus | F1-283 | Unclassified |
| Unknown | Field 1/Feltus | F1-285 | Unclassified |
| Unknown | Field 1/Feltus | F1-295 | Unclassified |
| Unknown | Field 1/Feltus | F1-307 | Unclassified |
| Unknown | Field 1/Feltus | F1-309 | Unclassified |
| Unknown | Field 1/Feltus | F1-311 | Unclassified |
| Unknown | Field 1/Feltus | F1-318 | Unclassified |
| Unknown | Field 1/Feltus | F1-320 | Unclassified |
| Unknown | Field 1/Feltus | F1-322 | Unclassified |
| Unknown | Field 1/Feltus | F1-324 | Unclassified |
| Unknown | Field 1/Feltus | F1-326 | Unclassified |
| Unknown | Field 1/Feltus | F1-328 | Unclassified |
| Unknown | Field 1/Feltus | F1-331 | Unclassified |
| Unknown | Field 1/Feltus | F1-333 | Unclassified |
| Unknown | Field 1/Feltus | F1-339 | Unclassified |

Table B.2: Prospere Point Collection (continued).

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Unknown | Field 1/Feltus | F1-348 | Unclassified |
| Unknown | Field 1/Feltus | F1-349 | Unclassified |
| Unknown | Field 1/Feltus | F1-352 | Unclassified |
| Unknown | Field 1/Feltus | F1-362 | Unclassified |
| Unknown | Field 1/Feltus | F1-371 | Madison |
| Unknown | Field 1/Feltus | F1-374 | Unclassified |
| Unknown | Field 1/Feltus | F1-377 | Unclassified |
| Unknown | Field 1/Feltus | F1-380 | Unclassified |
| Unknown | Field 1/Feltus | F1-381 | Unclassified |
| Unknown | Field 1/Feltus | F1-391 | Unclassified |
| Unknown | Field 1/Feltus | F1-392 | Unclassified |
| Unknown | Field 1/Feltus | F1-398 | Unclassified |
| Unknown | Field 1/Feltus | F1-403 | Unclassified |
| Unknown | Field 1/Feltus | F1-404 | Unclassified |
| Unknown | Field 1/Feltus | F1-406 | Unclassified |
| Unknown | Field 1/Feltus | F1-413 | Unclassified |
| Unknown | Field 1/Feltus | F1-421 | Unclassified |
| Unknown | Field 1/Feltus | F1-422 | Unclassified |
| Unknown | Field 2 | F2-32 | Unclassified |
| Unknown | Field 2 | F2-36 | Tortuga |
| Unknown | Field 2 | F2-38 | Marcos |
| Unknown | Field 2 | F2-41 | Group A |
| Unknown | Field 2 | F2-44 | Knife |
| Unknown | Field 2 | F2-50 | Abasolo |
| Unknown | Field 2 | F2-53 | Group C |
| Unknown | Field 2 | F2-56 | Group H |
| Unknown | Field 2 | F2-57 | Preform |
| Unknown | Field 2 | F2-58 | Unclassified |
| Unknown | Field 2 | F2-59 | Group D |
| Unknown | Field 2 | F2-60 | Group D |
| Unknown | Field 2 | F2-61 | Unclassified |
| Unknown | Field 2 | F2-62 | Knife |
| Unknown | Field 2 | F2-65 | Drill |
| Unknown | Field 2 | F2-68 | Unclassified |
| Unknown | Field 2 | F2-69 | Unclassified |
| Unknown | Field 2 | F2-71 | Unclassified |
| Unknown | Field 2 | F2-72 | Unclassified |
| Unknown | Field 2 | F2-73 | Drill |
| Unknown | Field 2 | F2-74 | Unclassified |
| Unknown | Field 2 | F2-76 | Scraper |
| Unknown | Field 2 | F2-77 | Unclassified |
| Unknown | Field 2 | F2-79 | Group D |
| Unknown | Field 2 | F2-82 | Unclassified |
| Unknown | Field 2 | F2-83 | Unclassified |
| Unknown | Field 2 | F2-84 | Unclassified |
| Unknown | Field 2 | F2-86 | Scraper |
| Unknown | Field 2 | F2-88 | Unclassified |
| Unknown | Field 2 | F2-93 | Knife |
| Unknown | Field 2 | F2-94 | Unclassified |
| Unknown | Field 2 | F2-95 | Drill |
| Unknown | Field 2 | F2-96 | Unclassified |
| Unknown | Field 2 | F2-98 | Group A |
| Unknown | Field 2 | F2-99 | Unclassified |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Unknown | Field 2 | F2-101 | Group G |
| Unknown | Field 3 | F3-2 | Group B |
| Unknown | Field 3 | F3-8 | Unclassified |
| Unknown | Field 3 | F3-9 | Scraper |
| Unknown | Field 3 | F3-10 | Scraper |
| Unknown | Field 3 | F3-12 | Unclassified |
| Unknown | Field 3 | F3-14 | Unclassified |
| Unknown | Field 3 | F3-15 | Unclassified |
| Unknown | Field 3 | F3-17 | Unclassified |
| Unknown | Field 3 | F3-18 | Group D |
| Unknown | Field 3 | F3-19 | Tortuga |
| Unknown | Field 3 | F3-22 | Unclassified |
| Unknown | Field 3 | F3-23 | Unclassified |
| Unknown | Field 3 | F3-27 | Group G |
| Unknown | Field 3 | F3-28 | Knife |
| Unknown | Field 3 | F3-29 | Scraper |
| Unknown | Field 3 | F3-33 | Unclassified |
| Unknown | Field 3 | F3-34 | Unclassified |
| Unknown | Field 3 | F3-35 | Group F |
| Unknown | Field 3 | F3-39 | Unclassified |
| Unknown | Field 3 | F3-40 | Group F |
| Unknown | Field 3 | F3-42 | Group D |
| Unknown | Field 3 | F3-44 | Unclassified |
| Unknown | Field 3 | F3-47 | Group C |
| Unknown | Field 3 | F3-48 | Group G |
| Unknown | Field 3 | F3-49 | Unclassified |
| Unknown | Field 3 | F3-50 | Unclassified |
| Unknown | Field 3 | F3-51 | Drill |
| Unknown | Field 3 | F3-53 | Unclassified |
| Unknown | Field 3 | F3-54 | Unclassified |
| Unknown | Field 3 | F3-55 | Unclassified |
| Unknown | Field 3 | F3-56 | Unclassified |
| Unknown | Field 3 | F3-57 | Group I |
| Unknown | Field 3 | F3-60 | Group C |
| Unknown | Field 3 | F3-61 | Unclassified |
| Unknown | Field 3 | F3-62 | Group E |
| Unknown | Field 3 | F3-63 | Unclassified |
| Unknown | Field 3 | F3-64 | Unclassified |
| Unknown | Field 3 | F3-65 | Group E |
| Unknown | Field 4 | F4-5 | Group C |
| Unknown | Field 5 | F5-5 | Unclassified |
| Unknown | Field 5 | F5-9 | Group H |
| Unknown | Field 5 | F5-10 | Group G |
| Unknown | Field 5 | F5-14 | Unclassified |
| Unknown | Field 5 | F5-16 | Group D |
| Unknown | Field 5 | F5-17 | Unclassified |
| Unknown | Field 5 | F5-18 | Marcos |
| Unknown | Field 5 | F5-20 | Tortuga |
| Unknown | Field 5 | F5-21 | Group C |
| Unknown | Field 5 | F5-23 | Scraper |
| Unknown | Field 5 | F5-26 | Group F |
| Unknown | Field 5 | F5-30 | Knife |
| Unknown | Field 5 | F5-31 | Group C |

Table B.2: Prospere Point Collection (continued).

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Unknown | Field 5 | F5-32 | Unclassified |
| Unknown | Field 5 | F5-33 | Unclassified |
| Unknown | Field 5 | F5-34 | Knife |
| Unknown | Field 5 | F5-35 | Group C |
| Unknown | Field 6 | F6-5 | Unclassified |
| Unknown | Pumpkin Lake 7 | PL7-1 | Madison |
| Unknown | Pumpkin Lake 7 | PL7-2 | Group C |
| Unknown | Pumpkin Lake 7 | PL7-3 | Group C |
| Unknown | Pumpkin Lake 7 | PL7-5 | Group H |
| Unknown | Pumpkin Lake 7 | PL7-6 | Group G |
| Unknown | Pumpkin Lake 7 | PL7-7 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-3 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-5 | Group B |
| Unknown | Pumpkin Lake 8 | PL8-8 | Group H |
| Unknown | Pumpkin Lake 8 | PL8-9 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-10 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-11 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-14 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-15 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-16 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-17 | Group B |
| Unknown | Pumpkin Lake 8 | PL8-18 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-20 | Group H |
| Unknown | Pumpkin Lake 8 | PL8-21 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-22 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-23 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-25 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-27 | Scraper |
| Unknown | Pumpkin Lake 8 | PL8-29 | Preform |
| Unknown | Pumpkin Lake 8 | PL8-33 | Madison |
| Unknown | Pumpkin Lake 8 | PL8-34 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-35 | Group D |
| Unknown | Pumpkin Lake 8 | PL8-36 | Tortuga |
| Unknown | Pumpkin Lake 8 | PL8-37 | Scraper |
| Unknown | Pumpkin Lake 8 | PL8-39 | Abasolo |
| Unknown | Pumpkin Lake 8 | PL8-40 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-42 | Scraper |
| Unknown | Pumpkin Lake 8 | PL8-43 | Scraper |
| Unknown | Pumpkin Lake 8 | PL8-46 | Tortuga |
| Unknown | Pumpkin Lake 8 | PL8-48 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-50 | Group D |
| Unknown | Pumpkin Lake 8 | PL8-52 | Abasolo |
| Unknown | Pumpkin Lake 8 | PL8-53 | Abasolo |
| Unknown | Pumpkin Lake 8 | PL8-55 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-56 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-57 | Group D |
| Unknown | Pumpkin Lake 8 | PL8-58 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-60 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-62 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-64 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-66 | Group I |
| Unknown | Pumpkin Lake 8 | PL8-67 | Scraper |
| Unknown | Pumpkin Lake 8 | PL8-68 | Group H |

**Table B.2: Prospere Point Collection (continued).**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Unknown | Pumpkin Lake 8 | PL8-69 | Group E |
| Unknown | Pumpkin Lake 8 | PL8-70 | Group E |
| Unknown | Pumpkin Lake 8 | PL8-74 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-77 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-78 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-79 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-80 | Tortuga |
| Unknown | Pumpkin Lake 8 | PL8-82 | Group H |
| Unknown | Pumpkin Lake 8 | PL8-84 | Group I |
| Unknown | Pumpkin Lake 8 | PL8-88 | Group I |
| Unknown | Pumpkin Lake 8 | PL8-89 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-90 | Tortuga |
| Unknown | Pumpkin Lake 8 | PL8-91 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-92 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-93 | Group H |
| Unknown | Pumpkin Lake 8 | PL8-94 | Unclassified |
| Unknown | Pumpkin Lake 8 | PL8-98 | Group G |
| Unknown | Pumpkin Lake 8 | PL8-99 | Unclassified |
| Unknown | Pumpkin Lake 9 | PL9-3 | Group D |
| Unknown | Pumpkin Lake 9 | PL9-8 | Group G |
| Unknown | Pumpkin Lake 9 | PL9-10 | Group G |
| Unknown | Pumpkin Lake 9 | PL9-12 | Unclassified |
| Unknown | Pumpkin Lake 9 | PL9-15 | Group C |
| Unknown | Pumpkin Lake 9 | PL9-17 | Group I |
| Unknown | Pumpkin Lake 9 | PL9-19 | Group G |
| Unknown | Pumpkin Lake 10 | PL10-2 | Unclassified |

**Table B.3: Smokye Frank Collection**

| Time Period | Location | Point Number | Point Type |
|---|---|---|---|
| Middle Archaic | South of PL10 | S-19 | Cypress Creek |
| Middle Archaic | Unknown | S-20 | Cypress Creek |
| Late Woodland | Feltus | S-1 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-2 | Collins, *var. Clifton* |
| Late Woodland | Feltus | S-3 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-4 | Collins, *var. Collins* |
| Late Woodland | Feltus | S-5 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-6 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-7 | Morris |
| Late Woodland | Feltus | S-8 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-9 | Collins, *var. Collins* |
| Late Woodland | Feltus | S-10 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-11 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-12 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-13 | Collins, *var. Collins* |
| Late Woodland | Feltus | S-14 | Corner-Notched |
| Late Woodland | Feltus | S-15 | Collins, *var. Serrated* |
| Late Woodland | Feltus | S-16 | Collins, *var. Clifton* |
| Late Woodland | Feltus | S-17 | Collins, *var. Serrated* |
| Unknown | South of PL10 | S-18 | Unclassified |
| Unknown | Unknown | S-21 | Preform |
| Unknown | Unknown | S-22 | Unclassified |
| Unknown | Unknown | S-23 | Preform |

# Appendix C: Morphometric Data

This section lists the variables and data as well as the Matlab program used for this analysis. To acquire data from the tps file created in tpsDig2, I wrote a program, using Matlab (R2011a), which inputs the landmark coordinates for each points and calculates distances and angles between certain points. For a complete list of variables used in this program, see C.1 and Figures 5.1-5.5.

**Table C.1: Variables**

| Variable | Description |
|---|---|
| A | Tip of the point, landmark A |
| B | Blade mid-section, measured halfway between landmark A and landmark C |
| C | Shoulder mid-section, landmark C |
| D | Base mid-section, landmark D |
| E | Left corner of shoulder, landmark E |
| F | Right corner of shoulder, landmark F |
| G | Left corner of base, landmark G |
| H | Right corner of base, landmark H |
| I | Left notching of the stem (left neck), landmark I |
| J | Right notching of the stem (right neck), landmark J |
| K | Left blade edge at mid-section height, landmark K |
| L | Right blade edge at mid-section height, landmark L |
| M | Left edge of the tip, measured ~1mm below tip, landmark M |
| N | Right edge of the tip, measured ~1mm below tip, landmark N |
| tl | Total length |
| sw | Shoulder width |
| nw | Neck width |
| bw | Base width |
| bl | Blade length |
| sl | Shoulder length |
| brl | Barb length |
| mw | Mid-section width |
| tw | Tip width |
| mwsw | Ratio of mid-section width to shoulder width |
| slbl | Ratio of stem length to blade length |
| swnw | Ratio of shoulder width to neck width |
| nwbw | Ratio of neck width to base width |
| twmw | Ratio of tip width to mid-section width |
| diagl | Length of the left blade edge diagonal, as measured from the left shoulder to the tip |
| diagr | Length of the right blade edge diagonal, as measured from the right shoulder to the tip |
| diagav | Average of diagl and diagr |
| area | Area of blade |
| p | Distance between g and i |
| q | Distance between g and d |
| r | Distance between i and d |
| s | Distance between h and j |

**Table C.1: Variables (continued).**

| Variable | Description |
|---|---|
| t | Distance between h and d |
| u | Distance between j and d |
| v | Used for circulating the block |
| Wa | Used for calculating angle G |
| G | Angle G, the angle of the left base ear |
| Wb | Used for calculating angle H |
| H | Angle H, the angle of the right base ear |
| GH | Angle GH, the average of angles G and H |
| x | Used for defining rows of the circulating blocks |
| cc | Distance between a and l |
| bb | Distance between a and k |
| Wc | Used for calculating angle Alk |
| Akl | Angle Alk, the angle of the tip using landmark A and the mid-section points K and L |
| dd | Distance between a and e |
| ee | Distance between a and f |
| Wd | Used to calculate angle Aef |
| Aef | Angle Aef, the angle of the tip using landmark A and the shoulder points E and F |
| A | Angle A, the average of Akl and Aef |
| ff | Distance between e and k |
| gg | Distance between e and c |
| hh | Distance between k and c |
| We | Used to calculate Angle Eck |
| Eck | Angle Eck, the angle of the left shoulder, using the middle of the shoulders and the left mid-section |
| ii | Distance between f and l |
| jj | Distance between f and c |
| kk | Distance between l and c |
| Wf | Used to calculate Angle Fcl |
| Fcl | Angle Fcl, the angle of the right shoulder, using the middle of the shoulders and the right mid-section |
| EFcmid | Angle Efcmid, the average of Angles Eck and Fcl |
| ll | Distance between e and a |
| mm | Distance between  a and c |
| Wg | Used to calculate Angle Eca |
| Eca | Angle Eca, the angle of the left shoulder, using the middle of the shoulders and the tip. |
| nn | Distance between f and a |
| Wh | Used calculate Angle Fca |
| Fca | Angle Fca, the angle of the right shoulder, using the middle of the shoulders and the tip. |
| EFca | Angle Efca, the average of Angles Eca and Fca. |
| oo | Distance between e and k |
| pp | Distance between e and i |
| qq | Distance between k and i |
| Wi | Used to calculate Angle Eik |
| Eik | Angle Eik, the angle of the left shoulder, using the left notching of the stem and the left mid-section point. |
| rr | Distance between f and l |
| ss | Distance between f and j |
| tt | Distance between l and j |
| Wj | Used to calculate Angle Fil |
| Fjl | Angle Fjl, the angle of the right shoulder, using the right notching of the stem and the right mid-section point. |
| EFnotmid | Angle Efnotmid, the average of Angles Eik and Fil |
| uu | Distance between a and i |

**Table C.1: Variables (continued).**

| Variable | Description |
|---|---|
| Wk | Used to calculate Angle Eia |
| Eia | Angle Eia, the angle of the left shoulder, using the left notching and the tip. |
| vv | Distance between a and j |
| Wl | Used to calculate Angle Fja |
| Fja | Angle Fja, the angle of the right shoulder, using the right notching and the tip. |
| EFnota | Angle Efnota, the average of Angles Eia and Fja |
| xx | Distance between e and g |
| Wm | Used to calculate Angle I |
| I | Angle I, the angle of the left notching. |
| zz | Distance between j and h |
| aaa | Distance between f and h |
| Wn | Used to calculate Angle J |
| J | Angle J, the angle of the right notching. |
| IJ | Angle IJ, the average of Angles I and J |
| bbb | Distance between g and h |
| Wo | Used to calculate Angle D |
| D | Angle D, the angle of the base |
| Z | The matrix of all of the measurements |

# Matlab Program

Below is the program for converting tps coordinates into measurements, ratios, and angles. Before using this program, I had created a tps file of landmark coordinates entitled "Point Coordinates" as well as an Excel document called "Data for Points," which I prepared with a list of points (in the order they appear in the tps file) and the labels of each variable. The resulting data is listed below.

```
%The first step is to get rid of all of the text in the tps file so that
%only the landmark coordinates are printed in the new file.  Note that
%all the coordinates for all the points will be put into one file with no
%separation between points.

fid = fopen ('Point Coordinates.txt','rt'); %Opening the tps data file, which is in the format of
a text document.

fid1 = fopen('Point Coordinates Rewritten.txt','w'); %opening new text file to write the new
data.

tline = fgetl(fid); %Skips the first line, which lists the number of landmarks.

Block = 1;   % Initialize block index so that the sequence of commands is repeated for each
point.

while (~feof(fid)) % For each block...

    %Each of these following commands prints a line of coordinates into the
    %text file.  These coordinates represent the location of each landmark.

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);
```

```
    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    tline = fgetl(fid);
    fprintf(fid1,'%s\n',tline);

    %Next, we skip the next four lines of the tps file, which list the
    %ID number, the picture location, the scale, and the number of
    %landmarks for the next point.

    tline = fgetl(fid);
    tline = fgetl(fid);
    tline = fgetl(fid);
    tline = fgetl(fid);

  end

fclose(fid); %Close the tps data file.

fid = fopen('Point Coordinates Rewritten.txt','rt');  %Opens the new text file we just wrote.

fid1 = fopen('Point Measurements.txt','w'); %Creates a new text file to write our new data into.
This file will list the distances between landmarks, as defined by the commands below.

Block = 1;   % Initializes block index.

x=1; %Defines the first row we want, which would be Landmark A of the first point.

F = importdata('Point Coordinates Rewritten.txt'); %Imports the coordinates.

for v = 1:155 %Defines how many times we want to run this loop.  This number will change
depending on how many points are in the data set.

v=v+1;

%First, we define the landmarks.  Each command below associates a pair of coordiantes with a
landmark label (A-N).
```

```
%Each x+1 tells the program to go to the next row.

a=F(x,:); %Defines the tip

x=x+1; %Moves to the next row of our text file

b=F(x,:); %Defines the mid-section of the blade

x=x+1; %Moves to the next row of our text file

c=F (x,:); %Defines the mid-section of the shoulders

x=x+1; %Moves to the next row of our text file

d=F (x,:); %Defines the mid-section of the base

x=x+1; %Moves to the next row of our text file

e=F (x,:); %Defines the left point of the shoulder

x=x+1; %Moves to the next row of our text file

f=F(x,:); %Defines the right point of the shoulder

x=x+1; %Moves to the next row of our text file

g=F(x,:); %Defines the left point of the base

x=x+1; %Moves to the next row of our text file

h=F (x,:); %Defines the right point of the base

x=x+1; %Moves to the next row of our text file

i=F (x,:); %Defines the left point of the neck

x=x+1; %Moves to the next row of our text file

j=F (x,:); %Defines the right point of the neck

x=x+1; %Moves to the next row of our text file

k=F(x,:); %Defines the left point of the mid-section of the blade

x=x+1; %Moves to the next row of our text file

l=F (x,:); %Defines the right point of the mid-section of the blade

x=x+1; %Moves to the next row of our text file

m=F (x,:); %Defines the left point of the tip, measured approximately 1mm down from the tip
itself.

x=x+1; %Moves to the next row of our text file

n=F (x,:); %Defines the right point of the tip, measured approximately 1mm down from the tip
itself.

x=x+1; %Moves to the next row of our text file

%Now that we have defined each of the coordinates, we want to measure certain distances between
them in order to get our desired measurements.  The matrix x is in pixels, so we convert these
measurements into
%millimeters by dividing by 19.34.  This number comes from the program tpsDig, in which 967
pixels = ~50mm, according to the size and
%dimension of the pictures I took.

tl=(pdist2 (a,d))/19.34; %Calculates total length

sw=(pdist2 (e,f))/19.34; %Calculates shoulder width
```

```
nw=(pdist2 (i,j))/19.34; %Calculates neck width

bw=(pdist2 (g,h))/19.34; %Calculates base width

bl=(pdist2 (a,c))/19.34; %Calculates blade length

sl=(pdist2 (c,d))/19.34; %Calculates shoulder length

brl=(bl+sl)-tl; %Calculates barb length

mw=(pdist2 (k,l))/19.34; %Calculates mid-section width

tw=(pdist2 (m,n))/19.34; %Calculates tip width

%Now we calculate ratios.

mwsw=((mw)/(sw)); %Calculates the ratio of mid-section width to shoulder width.

slbl=((sl)/(bl)); %Calculates the ratio of stem length to blade length.

swnw=((sw)/(nw)); %Calculates the ratio of shoulder width to the neck width.

nwbw=((nw)/(bw)); %Calculates the ratio of neck width to the base width.

twmw=((tw)/(mw)); %Calculates the ratio of tip width to the mid-section width.

%Now we calculate the length of the diagonals (the blade edge) from
%the tip to either of the shoulder edges.

diagl=(pdist2 (a,e))/19.34; %Calculates length left blade edge

diagr=(pdist2 (a,f))/19.34; %Calculates length of right blade edge

diagav=((diagl+diagr)/2); %Calculates the average of diagl and diagr.  Because left and right are
arbitrary for any given point, we want the average of the two diagonals.

area=(bl*sw*.5); %Calculates area of blade if the blade were in fact composed of three straight
lines like a triangle.

%Now calculate various angles between the landmarks.  We need to continue dividing by 19.34 to
convert pixels into millimeters.

%We start with finding Angle G, which is the angle formed by the intersection of the line from
%the left neck to the left base and the line from the mid-section of the
%base to the left base.

p=(pdist2 (g,i))/19.34; %Calculates the distance from the left corner of the base to the left
point of the neck.

q=(pdist2 (g,d))/19.34; %Calculates the distance from the left corner of the base to the mid-
point of the base.

r=(pdist2 (i,d))/19.34; %Calculates the distance from the left point of the neck to the the mid-
point of the base.

Wa=((p^2)+(q^2)-(r^2))/(2*p*q); %Calculates the number of which we need to find the arccosine.
G=acosd(Wa); %Calculates Angle G in degrees by using calculating the arccosine.  Because all of
the lengths of each side of Triangle pqr, we can use this formula to calculate Angle G.

%Now we find Angle H, which is the angle formed by the intersection of the line from
%the right neck to the right base and the line from the mid-section of the
%base to the right base.

s=(pdist2 (h,j))/19.34; %Calculates the distance from the right corner of the base to the right
point of the neck.

t=(pdist2 (h,d))/19.34; %Calculates the distance from the right corner of the base to the mid-
point of the base.

u=(pdist2 (j,d))/19.34; %Calculates the distance from the right point of the neck to the the mid-
point of the base.
```

```
Wb=((s^2)+(t^2)-(u^2))/(2*s*t); %Calculates the number of which we need to find the arccosine.

H=acosd(Wb); %Calculates Angle H in degrees by calculating the arccosine.  Because all of the
lengths of each side of Triangle stu, we can use this formula to calculate Angle H.

GH=((G+H)/2); %Calculates the average of Angle G and Angle H.  Because left and right are
arbitrary for any given point, we want the average of Angle G and Angle H.

%Now we find Angle Akl, which is the angle of the tip.  Angle Akl is measured
%from the tip to the mid-section points (k and l).

cc=(pdist2 (a,l))/19.34; %Calculates the distance from the tip of the point to the right mid-
section point (l).

bb=(pdist2 (a,k))/19.34; %Calculates the distance from the tip of the point to the left mid-
section point (k).

Wc=((cc^2)+(bb^2)-(mw^2))/(2*cc*bb); %Calculates the number we need to find the arccosine.  We
use mw as the distance between k and l.

Akl=acosd(Wc); %Calculates Angle Akl in degrees by using calculating the arccosine.  Angle Akl is
the angle of the tip as measured using the mid-section points.

%Now we find Angle Aef, which is the angle of the tip.  Angle Aef is measured
%from the tip to the shoulder points (e and f).

dd=(pdist2 (a,e))/19.34; %Calculates the distance from the tip of the point to the left corner
point (f).

ee=(pdist2 (a,f))/19.34; %Calculates the distance from the tip of the point to the right corner
point (e).

Wd=((dd^2)+(ee^2)-(sw^2))/(2*dd*ee); %Calculates the number we need to find the arccosine.  We
use sw as the distance between e and f.

Aef=acosd(Wd); %Calculates Angle Aef in degrees by calculating the arccosine.  Because all of the
lengths of each side of Triangle pqr, we can use this formula to calculate Angle Aef.  Angle Aef
is the angle of the tip as measured using the shoulder points.

A=((Akl+Aef)/2); %Calculates the average of Angle Aa and Angle Ab.

%Now we find Angle Eck, which is the angle of the left shoulder.  Angle Ec is measured
%using the middle of the shoulder (c) and the left mid-section point (k).

ff=(pdist2 (e,k))/19.34; %Calculates the distance from the left corner of the shoulder to the
left side of the mid-section point.

gg=(pdist2 (e,c))/19.34; %Calculates the distance from the left corner of the shoulder to the
middle of the shoulders (c).

hh=(pdist2 (k,c))/19.34; %Calculates the distance from the left mid-section point to the middle
of the shoulders.

We=((ff^2)+(gg^2)-(hh^2))/(2*ff*gg); %Calculates the number we need to find the arccosine.

Eck=acosd(We); %Calculates Angle Eck in degrees by calculating the arccosine.  Angle Eck is the
angle of the left shoulder, using the left mid-section point and the center of the shoulders.

%Now we find Angle Fcl, which is the angle of the right shoulder.  Angle Fcl is measured
%using the middle of the shoulder (c) and the right mid-section point (l).

ii=(pdist2 (f,l))/19.34; %Calculates the distance from the right corner of the shoulder to the
right side of the mid-section point.

jj=(pdist2 (f,c))/19.34; %Calculates the distance from the right corner of the shoulder to the
middle of the shoulders (c).

kk=(pdist2 (l,c))/19.34; %Calculates the distance from the right mid-section point to the middle
of the shoulders.
```

```
Wf=((ii^2)+(jj^2)-(kk^2))/(2*ii*jj); %Calculates the number we need to find the arccosine.

Fcl=acosd(Wf); %Calculates Angle Fcl in degrees by calculating the arccosine.  Angle Fcl is the
angle of the right shoulder, using the right mid-section point and the center of the shoulders.

EFcmid=((Eck+Fcl)/2); %Caluclates the average of Angle Eck and Angle Fcl

%Now we find Angle Eca, which is the angle of the left shoulder.  Angle Eca is measured
%using the middle of the shoulder (c) and the tip of the point (a).

ll=(pdist2 (e,a))/19.34; %Calculates the distance from the left corner of the shoulder to the tip
of the point.

mm=(pdist2 (a,c))/19.34; %Calculates the distance from the right mid-section point to the middle
of the shoulders.

Wg=((ll^2)+(gg^2)-(mm^2))/(2*ll*gg); %Calculates the number we need to find the arccosine.  We
can use gg because it is the distance between (e) and (c), as already measured for Angle Eck.

Eca=acosd(Wg); %Calculates Angle Eca in degrees by calculating the arccosine.  Angle Eca is the
angle of the left shoulder, using the tip and the center of the shoulders.

%Now we find Angle Fca, which is the angle of the right shoulder.  Angle Fca is measured
%using the middle of the shoulder (c) and the tip of the point (a).

nn=(pdist2 (f,a))/19.34; %Calculates the distance from the right corner of the shoulder to the
tip of the point.

Wh=((nn^2)+(jj^2)-(mm^2))/(2*nn*jj); %Calculates the number we need to find the arccosine.  We
can use jj because it is the distance between (f) and (c), as already measured for Angle Fca.  We
can also use mm, the distance between (a) and (c), as measured for Angle Eca.

Fca=acosd(Wh); %Calculates Angle Fca in degrees by calculating the arccosine.  Angle Fca is the
angle of the right shoulder, using the tip and the center of the shoulders.

EFca=((Eca+Fca)/2); %Caluclates the average of Angle Eca and Fca

%Now we find Angle Eik, which is the angle of the left shoulder.  Angle Eik is measured
%using the middle of the left nocthing (i) and the left mid-section point (k).

oo=(pdist2 (e,k))/19.34; %Calculates the distance from the left corner of the shoulder to the
left mid-section point.

pp=(pdist2 (e,i))/19.34; %Calculates the distance from the left corner of the shoulder to the
left notching of the stem.

qq=(pdist2 (k,i))/19.34; %Calculates the distance from the left mid-section point to the left
nocthing.

Wi=((oo^2)+(pp^2)-(qq^2))/(2*oo*pp); %Calculates the number we need to find the arccosine.

Eik=acosd(Wi); %Calculates Angle Eik in degrees by calculating the arccosine.  Angle Eik is the
angle of the left shoulder using the left notching (i) and the left mid-section point (k).

%Now we find Angle Fil, which is the angle of the right shoulder.  Angle Fil is measured
%using the middle of the right nocthing (j) and the right mid-section point (l).

rr=(pdist2 (f,l))/19.34; %Calculates the distance from the right corner of the shoulder to the
right mid-section point.

ss=(pdist2 (f,j))/19.34; %Calculates the distance from the right corner of the shoulder to the
right notching of the stem.

tt=(pdist2 (l,j))/19.34; %Calculates the distance from the right mid-section point to the right
nocthing.

Wj=((rr^2)+(ss^2)-(tt^2))/(2*rr*ss); %Calculates the number we need to find the arccosine.

Fjl=acosd(Wj); %Calculates Angle Fil in degrees by calculating the arccosine.  Angle Fjl is the
angle of the right shoulder using the right notching (j) and the right mid-section point (l).
```

```
EFnotmid=((Eik+Fjl)/2); %Calculates the average of Angle Eik and Angle Fjl.

%Now we find Angle Eia, which is the angle of the left shoulder.  Angle Eia is measured
%using the middle of the left noc thing (i) and the tip (a).

uu=(pdist2 (a,i))/19.34; %Calculates the distance from the tip to the left notching of the stem.

Wk=((ll^2)+(pp^2)-(uu^2))/(2*ll*pp); %Calculates the number we need to find the arccosine.  We
can use ll as the distance between e and a and pp as the distance between e and i.

Eia=acosd(Wk); %Calculates Angle Eia in degrees by calculating the arccosine.  Angle Eia is the
angle of the left shoulder using the left notching (i) and the tip (a).

%Now we find Angle Fja, which is the angle of the right shoulder.  Angle Fja is measured
%using the middle of the right nocthing (j) and the tip (a).

vv=(pdist2 (a,j))/19.34; %Calculates the distance from the tip to the right notching.

Wl=((nn^2)+(ss^2)-(vv^2))/(2*nn*ss); %Calculates the number we need to find the arccosine.  We
can use nn as the distance between a and f and ss as the distance between f and j.

Fja=acosd(Wl); %Calculates Angle Fja in degrees by calculating the arccosine.  Angle Fja is the
angle of the right shoulder using the right notching (j) and the tip (a).

EFnota=((Eia+Fja)/2); %Calculates the average of Angle Eia and Angle Fja.

%Now, we move to the angles of the notching, starting with Angle I, which
%is the angle of the left notching, using the left shoulder (e) and the
%left corner of the base (g).

ww=(pdist2 (i,g))/19.34; %Calculates the distance between i and g.

xx=(pdist2 (e,g))/19.34; %Calculates the distance between e and g.

Wm=((pp^2)+(ww^2)-(xx^2))/(2*pp*ww); %Calculates the number we need for the arccosine.  We can
use pp as the distance between e and i.

I=acosd(Wm); %Calculates Angle I in degrees by calculating the arccosine.  Angle I is the angle
of the left notching.

%Now, to the right notching (Angle J).

zz=(pdist2 (j,h))/19.34; %Calculates the distance between j and h.

aaa=(pdist2 (f,h))/19.34; %Calculates the distance between f and h.

Wn=((ss^2)+(zz^2)-(aaa^2))/(2*ss*zz); %Calculates the number we need for the arccosine.  We can
use ss for the distance between f and j.

J=acosd(Wn); %Calculates Angle J in degrees by calculating the arccosine.  Angle J is the angle
of the right notching.

IJ=((I+J)/2); %Calculates the average of Angle I and Angle J.

%Now, we will measure Angle D, which is the angle of the base.

bbb=(pdist2 (g,h))/19.34; %Calculates the distance between g and h.

Wo=((q^2)+(t^2)-(bbb^2))/(2*q*t); %Calculates the number we need for the arccosine.  We can use q
for the distance between g and d, and we can use t for the distance between h and d.

D=acosd(Wo); %Calculates Angle D in degrees by calculating the arccosine.  Angle D is the angle
of the base.

Z=[tl sw nw bw bl sl brl mw tw mwsw slbl swnw nwbw diagl diagr diagav area G H GH Akl Aef A Eck
Fcl EFcmid Eca Fca EFca Eik Fjl EFnotmid Eia Fja EFnota I J IJ D] %Puts the measurements into a
matrix.

dlmwrite ('Point Measurements.txt', Z, '-append'); %Writes Matrix Z into a text file.  Each time
this loop runs, the matrix is added to the matrices that were already written into the text file.
```

```
This creates a file where each row contains all of the measurements, delineated by commas, for
one point.  The number of rows equals the number of points.

end %Now it will loop back to repeat these steps for the next point until all of the points'
measurements have been calculated.

E = importdata('Point Measurements.txt'); %Inputs the text file with the measurements into one
mega-matrix called Matrix E.

xlswrite('Data for Points.xlsx', E, 'Sheet1', 'C2'); %Writes Matrix E of all of the measurements
combined into the prepared spreadsheet.  The spreadsheet has been prepared with the point names
and measurement labels in the proper order.
```

## Morphometric Data

Below are tables listing the morphometric data used in this analysis. The tables are divided into corner-notched and side-notched types. The first tables (Table C.2 and Table C.3) list basic measurements for each point. Table C.4 and Table C.5 show ratios, diagonal lengths, and the blade area for each point. Next, the angle measurements are listed (Table C.6 and Table C.7), with the shoulder angles listed separately (Table C.8 and Table C.9). For complete descriptions of these measurements, see Table C.1.

**Table C.2: Basic Measurements for Corner-Notched Types.**

| Point | Type | tl | sw | nw | bw | bl | sl | brl | mw | tw |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-13 | Alba | 25.10 | 19.59 | 5.32 | 4.89 | 19.86 | 5.28 | 0.04 | 10.26 | 2.96 |
| F1-15 | Alba | 27.10 | 18.71 | 6.99 | 8.27 | 19.44 | 7.66 | 0.00 | 9.94 | 1.81 |
| F1-82 | Alba | 19.85 | 18.93 | 7.05 | 7.88 | 14.19 | 5.66 | 0.00 | 9.81 | 2.16 |
| F1-265 | Alba | 32.48 | 13.85 | 6.49 | 7.74 | 25.92 | 6.57 | 0.01 | 11.12 | 1.19 |
| PL8-7 | Alba | 17.91 | 9.37 | 4.09 | 4.82 | 12.53 | 5.38 | 0.00 | 6.21 | 2.38 |
| F1-23 | Colbert | 24.03 | 17.54 | 6.04 | 7.45 | 18.18 | 5.89 | 0.05 | 8.93 | 1.45 |
| F1-36 | Colbert | 15.83 | 11.91 | 4.97 | 6.25 | 11.54 | 4.29 | 0.00 | 8.28 | 3.62 |
| F1-38 | Colbert | 30.87 | 21.30 | 7.55 | 8.79 | 24.36 | 6.54 | 0.03 | 9.46 | 2.07 |
| F1-44 | Colbert | 38.78 | 20.04 | 7.11 | 9.11 | 31.60 | 7.20 | 0.01 | 8.89 | 2.12 |
| F1-99 | Colbert | 27.76 | 15.10 | 6.16 | 7.36 | 22.75 | 5.02 | 0.01 | 8.48 | 3.36 |
| F1-234 | Colbert | 26.19 | 7.45 | 5.85 | 7.86 | 19.96 | 6.29 | 0.06 | 5.44 | 2.28 |
| F1-257 | Colbert | 33.12 | 12.37 | 7.24 | 11.01 | 24.95 | 8.17 | 0.00 | 12.47 | 3.16 |
| F2-16 | Colbert | 24.49 | 17.47 | 6.79 | 8.47 | 18.71 | 5.77 | 0.00 | 8.91 | 1.76 |
| F3-4 | Colbert | 28.49 | 13.67 | 6.76 | 8.01 | 23.68 | 4.81 | 0.00 | 6.31 | 1.35 |
| 383-1 | Scallorn | 18.84 | 12.26 | 7.72 | 9.59 | 14.28 | 4.57 | 0.01 | 7.76 | 3.72 |
| F1-18 | Scallorn | 30.77 | 15.02 | 6.75 | 8.97 | 25.19 | 5.58 | 0.00 | 6.57 | 2.33 |
| F1-20 | Scallorn | 24.12 | 14.04 | 6.88 | 8.82 | 19.84 | 4.29 | 0.02 | 6.10 | 1.91 |
| F1-34 | Scallorn | 21.15 | 12.74 | 6.22 | 7.83 | 16.22 | 4.93 | 0.00 | 7.45 | 1.71 |
| F1-35 | Scallorn | 18.44 | 13.31 | 6.45 | 8.13 | 12.89 | 5.56 | 0.00 | 9.10 | 3.00 |
| F1-37 | Scallorn | 19.13 | 10.60 | 5.21 | 6.20 | 14.39 | 4.77 | 0.03 | 6.72 | 1.81 |
| F1-39 | Scallorn | 21.11 | 11.31 | 5.29 | 7.50 | 15.78 | 5.33 | 0.00 | 7.18 | 1.97 |
| F1-42 | Scallorn | 31.14 | 16.24 | 7.40 | 8.75 | 26.64 | 4.50 | 0.00 | 7.08 | 1.60 |
| F1-50 | Scallorn | 27.18 | 14.60 | 5.22 | 9.03 | 21.17 | 6.01 | 0.00 | 7.61 | 2.43 |
| F1-81 | Scallorn | 22.98 | 12.48 | 5.69 | 8.05 | 18.11 | 4.87 | 0.00 | 8.18 | 1.35 |
| F1-215 | Scallorn | 21.36 | 12.62 | 5.34 | 7.97 | 16.96 | 4.40 | 0.00 | 4.86 | 1.19 |
| F1-255 | Scallorn | 17.84 | 13.70 | 5.21 | 8.51 | 11.90 | 5.96 | 0.02 | 6.53 | 2.74 |
| F1-271 | Scallorn | 31.94 | 10.82 | 5.97 | 6.03 | 26.89 | 5.07 | 0.02 | 7.04 | 1.71 |
| F1-400 | Scallorn | 24.13 | 11.45 | 4.71 | 5.18 | 19.89 | 4.25 | 0.00 | 5.64 | 1.29 |
| F2-15 | Scallorn | 26.62 | 13.50 | 5.64 | 7.86 | 20.36 | 6.26 | 0.01 | 9.26 | 2.33 |
| F3-5 | Scallorn | 50.11 | 11.43 | 7.40 | 9.10 | 41.16 | 8.95 | 0.00 | 10.24 | 3.26 |

**Table C.3: Basic Measurements for Side-Notched Types (**

| Point | Type | tl | sw | nw | bw | bl | sl | brl | mw | tw |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-45 | Bayougoula Fishtailed | 36.63 | 14.05 | 6.68 | 10.23 | 23.97 | 12.68 | 0.01 | 6.33 | 2.28 |
| F1-47 | Bayougoula Fishtailed | 32.22 | 16.15 | 10.65 | 15.24 | 21.44 | 10.78 | 0.00 | 7.92 | 2.33 |
| 1386-1 | Collins, *var. Claiborne* | 22.71 | 10.30 | 5.63 | 8.64 | 14.94 | 7.78 | 0.01 | 7.65 | 1.71 |
| 531-1 | Collins, *var. Claiborne* | 34.86 | 13.39 | 8.02 | 10.88 | 27.17 | 7.71 | 0.02 | 10.24 | 2.53 |
| F1-6 | Collins, *var. Claiborne* | 27.22 | 12.79 | 5.50 | 7.55 | 20.65 | 6.66 | 0.09 | 10.15 | 2.85 |
| F1-29 | Collins, *var. Claiborne* | 45.90 | 12.42 | 7.79 | 10.64 | 39.74 | 6.16 | 0.00 | 13.39 | 3.26 |
| F1-52 | Collins, *var. Claiborne* | 26.31 | 10.77 | 6.01 | 7.65 | 18.99 | 7.37 | 0.06 | 8.12 | 1.91 |
| F1-91 | Collins, *var. Claiborne* | 33.52 | 15.76 | 7.39 | 8.67 | 27.30 | 6.23 | 0.01 | 11.95 | 2.64 |
| F1-93 | Collins, *var. Claiborne* | 26.46 | 14.26 | 6.64 | 9.02 | 21.66 | 4.87 | 0.07 | 12.72 | 2.95 |
| F1-112 | Collins, *var. Claiborne* | 29.79 | 14.42 | 8.28 | 9.77 | 22.09 | 7.73 | 0.03 | 9.22 | 1.50 |
| F1-145 | Collins, *var. Claiborne* | 37.45 | 11.01 | 7.96 | 8.37 | 28.29 | 9.16 | 0.00 | 7.14 | 1.66 |
| F1-226 | Collins, *var. Claiborne* | 31.32 | 10.82 | 5.81 | 9.83 | 23.50 | 7.83 | 0.01 | 6.88 | 1.86 |
| F1-259 | Collins, *var. Claiborne* | 35.70 | 22.96 | 5.87 | 6.14 | 29.39 | 6.31 | 0.00 | 7.35 | 2.28 |
| F1-268 | Collins, *var. Claiborne* | 25.51 | 12.51 | 7.28 | 9.61 | 15.57 | 9.94 | 0.00 | 7.35 | 3.52 |
| F1-270 | Collins, *var. Claiborne* | 26.43 | 13.90 | 5.05 | 6.84 | 20.61 | 5.82 | 0.01 | 6.88 | 2.17 |
| F1-298 | Collins, *var. Claiborne* | 27.80 | 10.58 | 8.60 | 10.03 | 20.04 | 7.77 | 0.00 | 5.07 | 0.93 |
| F1-8 | Collins, *var. Clifton* | 21.51 | 11.48 | 7.56 | 8.53 | 14.58 | 6.93 | 0.01 | 7.70 | 1.71 |
| F1-17 | Collins, *var. Clifton* | 22.65 | 9.69 | 5.29 | 8.26 | 16.87 | 5.79 | 0.01 | 7.14 | 2.02 |
| F1-26 | Collins, *var. Clifton* | 18.75 | 11.44 | 5.90 | 7.30 | 13.54 | 5.22 | 0.01 | 5.89 | 1.65 |
| F1-27 | Collins, *var. Clifton* | 18.72 | 12.41 | 6.93 | 8.55 | 12.67 | 6.05 | 0.00 | 5.79 | 2.02 |
| F1-28 | Collins, *var. Clifton* | 17.99 | 9.13 | 5.22 | 7.25 | 12.68 | 5.35 | 0.03 | 6.26 | 2.38 |
| F1-33 | Collins, *var. Clifton* | 21.31 | 11.51 | 6.79 | 7.95 | 14.23 | 7.09 | 0.00 | 6.62 | 2.17 |
| F1-246 | Collins, *var. Clifton* | 21.58 | 11.70 | 6.26 | 7.71 | 16.24 | 5.36 | 0.02 | 7.14 | 0.93 |
| F1-325 | Collins, *var. Clifton* | 27.31 | 10.10 | 6.13 | 7.82 | 20.85 | 6.46 | 0.00 | 7.91 | 1.29 |
| S-2 | Collins, *var. Clifton* | 29.64 | 9.27 | 5.08 | 8.84 | 23.54 | 6.10 | 0.00 | 6.67 | 1.71 |
| S-16 | Collins, *var. Clifton* | 21.29 | 12.48 | 7.15 | 7.55 | 16.24 | 5.07 | 0.01 | 8.84 | 2.74 |
| F1-7 | Collins, *var. Collins* | 27.88 | 13.35 | 8.08 | 11.65 | 22.01 | 5.89 | 0.02 | 9.74 | 1.50 |
| F1-10 | Collins, *var. Collins* | 21.59 | 11.42 | 5.34 | 6.27 | 15.58 | 6.01 | 0.00 | 6.37 | 1.30 |
| F1-25 | Collins, *var. Collins* | 22.97 | 9.80 | 5.65 | 8.39 | 16.62 | 6.36 | 0.02 | 4.96 | 1.50 |
| F1-62 | Collins, *var. Collins* | 28.20 | 11.45 | 7.18 | 7.99 | 23.03 | 5.30 | 0.13 | 6.45 | 1.03 |
| F1-102 | Collins, *var. Collins* | 27.66 | 9.76 | 6.84 | 6.84 | 23.88 | 3.78 | 0.00 | 7.86 | 2.24 |
| F1-123 | Collins, *var. Collins* | 27.61 | 12.51 | 7.31 | 10.15 | 21.62 | 6.00 | 0.01 | 7.93 | 2.74 |
| F1-151 | Collins, *var. Collins* | 18.42 | 10.93 | 9.57 | 12.83 | 11.80 | 6.68 | 0.06 | 4.86 | 1.60 |
| F1-227 | Collins, *var. Collins* | 27.30 | 12.01 | 5.33 | 7.43 | 21.22 | 6.08 | 0.00 | 6.49 | 1.86 |
| F1-277 | Collins, *var. Collins* | 28.02 | 15.39 | 8.07 | 10.76 | 20.18 | 7.92 | 0.08 | 8.23 | 2.12 |

**Table C.3: Basic Measurements for Side-Notched Types (continued).**

| Point | Type | tl | sw | nw | bw | bl | sl | brl | mw | tw |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-353 | Collins, *var. Collins* | 22.07 | 10.07 | 6.11 | 7.64 | 15.37 | 6.70 | 0.01 | 5.23 | 1.34 |
| F1-354 | Collins, *var. Collins* | 24.99 | 9.05 | 5.19 | 6.58 | 18.09 | 6.93 | 0.03 | 7.56 | 1.97 |
| F1-368 | Collins, *var. Collins* | 28.18 | 11.75 | 5.91 | 9.78 | 20.11 | 8.07 | 0.00 | 7.86 | 2.84 |
| F1-382 | Collins, *var. Collins* | 26.47 | 12.88 | 6.57 | 10.66 | 19.27 | 7.20 | 0.00 | 7.09 | 2.17 |
| F1-388 | Collins, *var. Collins* | 21.06 | 12.31 | 4.93 | 9.31 | 13.27 | 7.79 | 0.00 | 8.23 | 2.53 |
| F3-31 | Collins, *var. Collins* | 29.73 | 11.89 | 5.43 | 11.35 | 21.51 | 8.22 | 0.00 | 6.57 | 1.40 |
| F5-1 | Collins, *var. Collins* | 33.86 | 18.29 | 6.79 | 7.14 | 25.83 | 8.08 | 0.05 | 9.63 | 1.92 |
| S-4 | Collins, *var. Collins* | 34.91 | 12.78 | 7.00 | 10.20 | 27.92 | 7.00 | 0.01 | 6.10 | 1.81 |
| S-9 | Collins, *var. Collins* | 27.52 | 11.45 | 4.84 | 8.17 | 22.20 | 5.33 | 0.00 | 8.02 | 2.48 |
| S-13 | Collins, *var. Collins* | 21.40 | 12.37 | 7.14 | 7.53 | 15.93 | 5.48 | 0.01 | 8.90 | 2.69 |
| 614-1 | Collins, *var. Serrated* | 36.52 | 11.26 | 7.53 | 11.36 | 29.90 | 6.62 | 0.00 | 6.31 | 1.04 |
| F1-2 | Collins, *var. Serrated* | 30.94 | 13.14 | 8.24 | 11.41 | 22.04 | 8.91 | 0.00 | 6.57 | 1.66 |
| F1-3 | Collins, *var. Serrated* | 25.03 | 12.62 | 6.19 | 7.67 | 18.00 | 7.12 | 0.10 | 6.31 | 1.86 |
| F1-5 | Collins, *var. Serrated* | 34.50 | 12.46 | 6.78 | 9.64 | 27.23 | 7.29 | 0.03 | 7.50 | 1.92 |
| F1-9 | Collins, *var. Serrated* | 23.27 | 8.64 | 5.61 | 9.10 | 16.75 | 6.52 | 0.00 | 3.10 | 1.03 |
| F1-11 | Collins, *var. Serrated* | 20.37 | 12.84 | 5.76 | 8.14 | 14.89 | 5.50 | 0.02 | 6.83 | 1.97 |
| F1-31 | Collins, *var. Serrated* | 28.70 | 9.21 | 5.38 | 7.62 | 22.03 | 6.67 | 0.00 | 4.09 | 1.29 |
| F1-32 | Collins, *var. Serrated* | 30.97 | 11.14 | 4.14 | 6.27 | 25.23 | 5.74 | 0.00 | 5.17 | 0.78 |
| F1-40 | Collins, *var. Serrated* | 21.70 | 12.00 | 6.00 | 7.60 | 16.68 | 5.02 | 0.00 | 7.76 | 2.02 |
| F1-41 | Collins, *var. Serrated* | 24.68 | 10.66 | 5.75 | 6.46 | 20.41 | 4.29 | 0.03 | 6.28 | 1.24 |
| F1-43 | Collins, *var. Serrated* | 39.10 | 12.62 | 6.85 | 11.45 | 33.98 | 5.12 | 0.00 | 6.57 | 1.03 |
| F1-46 | Collins, *var. Serrated* | 40.64 | 13.97 | 7.07 | 11.28 | 32.17 | 8.50 | 0.02 | 6.36 | 1.50 |
| F1-48 | Collins, *var. Serrated* | 33.40 | 9.67 | 6.03 | 10.45 | 24.87 | 8.54 | 0.00 | 3.67 | 1.45 |
| F1-53 | Collins, *var. Serrated* | 25.87 | 9.82 | 5.69 | 8.43 | 19.98 | 5.89 | 0.00 | 6.83 | 1.71 |
| F1-54 | Collins, *var. Serrated* | 29.00 | 11.88 | 5.95 | 8.44 | 23.66 | 5.34 | 0.00 | 6.41 | 1.55 |
| F1-56 | Collins, *var. Serrated* | 40.02 | 12.62 | 6.69 | 11.84 | 31.75 | 8.27 | 0.00 | 8.12 | 1.14 |
| F1-57 | Collins, *var. Serrated* | 31.24 | 11.99 | 7.50 | 9.43 | 24.78 | 6.47 | 0.01 | 7.65 | 1.66 |
| F1-58 | Collins, *var. Serrated* | 37.17 | 10.39 | 5.43 | 7.93 | 30.16 | 7.01 | 0.00 | 4.93 | 0.83 |
| F1-59 | Collins, *var. Serrated* | 31.63 | 10.31 | 4.82 | 8.89 | 25.67 | 5.96 | 0.00 | 6.52 | 1.29 |
| F1-61 | Collins, *var. Serrated* | 35.05 | 11.47 | 5.44 | 10.31 | 25.73 | 9.32 | 0.00 | 5.94 | 1.29 |
| F1-64 | Collins, *var. Serrated* | 30.89 | 12.62 | 7.06 | 9.94 | 23.63 | 7.32 | 0.06 | 7.09 | 1.45 |
| F1-65 | Collins, *var. Serrated* | 32.05 | 15.84 | 5.95 | 7.81 | 25.95 | 6.10 | 0.01 | 5.85 | 1.50 |
| F1-66 | Collins, *var. Serrated* | 26.24 | 11.31 | 6.26 | 9.72 | 19.29 | 6.96 | 0.01 | 5.58 | 1.68 |
| F1-67 | Collins, *var. Serrated* | 31.74 | 9.06 | 5.03 | 8.03 | 22.77 | 8.97 | 0.00 | 5.86 | 1.34 |
| F1-69 | Collins, *var. Serrated* | 31.69 | 13.18 | 6.62 | 11.79 | 24.25 | 7.43 | 0.00 | 5.21 | 1.30 |
| F1-70 | Collins, *var. Serrated* | 29.83 | 12.19 | 6.24 | 10.28 | 23.17 | 6.66 | 0.00 | 8.22 | 1.45 |
| F1-80 | Collins, *var. Serrated* | 42.72 | 10.05 | 5.51 | 6.98 | 35.32 | 7.40 | 0.00 | 4.92 | 1.19 |

**Table C.3: Basic Measurements for Side-Notched Types (continued).**

| Point | Type | tl | sw | nw | bw | bl | sl | brl | mw | tw |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-125 | Collins, *var. Serrated* | 22.26 | 10.48 | 6.84 | 7.54 | 15.52 | 6.75 | 0.01 | 9.00 | 1.60 |
| F1-130 | Collins, *var. Serrated* | 23.39 | 13.14 | 7.41 | 11.40 | 16.03 | 7.45 | 0.09 | 9.01 | 2.79 |
| F1-169 | Collins, *var. Serrated* | 37.85 | 14.02 | 10.65 | 10.96 | 31.39 | 6.46 | 0.00 | 7.97 | 1.76 |
| F1-214 | Collins, *var. Serrated* | 21.36 | 13.92 | 6.54 | 8.53 | 16.19 | 5.17 | 0.00 | 6.88 | 2.43 |
| F1-223 | Collins, *var. Serrated* | 36.04 | 13.72 | 8.14 | 10.93 | 27.28 | 8.79 | 0.04 | 12.58 | 2.85 |
| F1-241 | Collins, *var. Serrated* | 18.20 | 9.20 | 6.26 | 9.24 | 12.62 | 5.58 | 0.00 | 5.58 | 1.50 |
| F1-248 | Collins, *var. Serrated* | 14.95 | 13.17 | 5.23 | 6.74 | 9.31 | 5.64 | 0.00 | 6.47 | 2.53 |
| F1-306 | Collins, *var. Serrated* | 17.76 | 9.20 | 6.41 | 9.52 | 11.75 | 6.01 | 0.00 | 5.49 | 3.05 |
| F1-345 | Collins, *var. Serrated* | 30.10 | 10.30 | 5.28 | 8.05 | 20.48 | 9.63 | 0.01 | 7.14 | 1.40 |
| S-3 | Collins, *var. Serrated* | 32.47 | 6.90 | 5.56 | 5.48 | 28.55 | 3.95 | 0.02 | 7.87 | 2.22 |
| S-5 | Collins, *var. Serrated* | 29.42 | 10.76 | 4.41 | 4.72 | 24.10 | 5.33 | 0.01 | 5.08 | 0.93 |
| S-6 | Collins, *var. Serrated* | 23.84 | 10.71 | 6.81 | 8.26 | 18.56 | 5.30 | 0.02 | 4.19 | 0.88 |
| S-8 | Collins, *var. Serrated* | 29.40 | 13.19 | 6.26 | 5.53 | 23.40 | 6.00 | 0.00 | 7.09 | 1.40 |
| S-10 | Collins, *var. Serrated* | 32.49 | 10.99 | 5.64 | 8.34 | 26.96 | 5.55 | 0.02 | 5.54 | 1.29 |
| S-11 | Collins, *var. Serrated* | 32.54 | 8.60 | 5.91 | 6.15 | 27.38 | 5.17 | 0.01 | 4.65 | 1.65 |
| S-15 | Collins, *var. Serrated* | 26.47 | 9.57 | 6.02 | 8.22 | 21.86 | 4.61 | 0.00 | 5.90 | 1.96 |
| 1625-3 | Collins, *var. Unspecified* | 34.66 | 9.69 | 6.73 | 4.40 | 25.96 | 8.83 | 0.14 | 9.89 | 3.00 |
| 469a-1 | Collins, *var. Unspecified* | 26.63 | 8.53 | 6.09 | 7.16 | 19.39 | 7.25 | 0.01 | 7.96 | 2.02 |
| F1-87 | Collins, *var. Unspecified* | 40.54 | 10.19 | 8.80 | 10.98 | 31.97 | 8.62 | 0.05 | 8.77 | 1.86 |
| F1-118 | Collins, *var. Unspecified* | 33.02 | 12.13 | 5.28 | 5.33 | 26.28 | 6.74 | 0.00 | 11.91 | 1.81 |
| F1-175 | Collins, *var. Unspecified* | 32.16 | 13.87 | 6.59 | 6.52 | 26.68 | 5.49 | 0.00 | 8.95 | 1.60 |
| F1-185 | Collins, *var. Unspecified* | 22.13 | 11.76 | 6.50 | 7.87 | 18.15 | 4.00 | 0.01 | 4.60 | 1.50 |
| F1-415 | Collins, *var. Unspecified* | 22.07 | 14.75 | 5.93 | 7.40 | 16.15 | 5.91 | 0.00 | 7.66 | 1.45 |
| F1-19 | Morris | 20.11 | 10.14 | 6.10 | 7.41 | 15.57 | 4.56 | 0.01 | 6.88 | 1.71 |
| F1-68 | Morris | 33.18 | 12.21 | 5.86 | 10.00 | 28.42 | 4.77 | 0.01 | 6.46 | 1.55 |
| F1-222 | Morris | 19.19 | 8.18 | 6.84 | 8.67 | 13.32 | 5.87 | 0.00 | 4.16 | 1.29 |
| F1-274 | Morris | 25.58 | 13.10 | 5.97 | 6.62 | 20.77 | 4.87 | 0.07 | 5.64 | 1.50 |
| F1-275 | Morris | 31.92 | 8.30 | 7.10 | 8.52 | 25.06 | 6.86 | 0.01 | 8.07 | 3.88 |
| S-7 | Morris | 25.08 | 9.01 | 4.81 | 8.28 | 17.71 | 7.37 | 0.00 | 6.43 | 2.07 |

**Table C.4: Ratios, Diagonal Lengths, and Blade Area for Corner-Notched Types.**

| Point | Type | mwsw | slbl | swnw | nwbw | twmw | diagl | diagr | diagav | area |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-13 | Alba | 0.52 | 0.27 | 3.68 | 1.09 | 0.29 | 21.41 | 19.94 | 20.67 | 194.45 |
| F1-15 | Alba | 0.53 | 0.39 | 2.68 | 0.85 | 0.18 | 20.78 | 21.83 | 21.31 | 181.89 |
| F1-82 | Alba | 0.52 | 0.40 | 2.69 | 0.90 | 0.22 | 17.21 | 18.39 | 17.80 | 134.28 |
| F1-265 | Alba | 0.80 | 0.25 | 2.14 | 0.84 | 0.11 | 27.54 | 25.48 | 26.51 | 179.55 |
| PL8-7 | Alba | 0.66 | 0.43 | 2.29 | 0.85 | 0.38 | 12.83 | 13.41 | 13.12 | 58.73 |
| F1-23 | Colbert | 0.51 | 0.32 | 2.91 | 0.81 | 0.16 | 20.90 | 19.84 | 20.37 | 159.47 |
| F1-36 | Colbert | 0.70 | 0.37 | 2.40 | 0.79 | 0.44 | 13.33 | 12.40 | 12.86 | 68.70 |
| F1-38 | Colbert | 0.44 | 0.27 | 2.82 | 0.86 | 0.22 | 26.40 | 28.07 | 27.24 | 259.41 |
| F1-44 | Colbert | 0.44 | 0.23 | 2.82 | 0.78 | 0.24 | 32.60 | 33.34 | 32.97 | 316.61 |
| F1-99 | Colbert | 0.56 | 0.22 | 2.45 | 0.84 | 0.40 | 23.89 | 22.37 | 23.13 | 171.80 |
| F1-234 | Colbert | 0.73 | 0.32 | 1.27 | 0.74 | 0.42 | 19.47 | 20.82 | 20.14 | 74.31 |
| F1-257 | Colbert | 1.01 | 0.33 | 1.71 | 0.66 | 0.25 | 25.31 | 25.55 | 25.43 | 154.24 |
| F2-16 | Colbert | 0.51 | 0.31 | 2.57 | 0.80 | 0.20 | 21.72 | 21.68 | 21.70 | 163.48 |
| F3-4 | Colbert | 0.46 | 0.20 | 2.02 | 0.84 | 0.21 | 24.23 | 26.42 | 25.32 | 161.86 |
| 383-1 | Scallorn | 0.63 | 0.32 | 1.59 | 0.80 | 0.48 | 15.62 | 16.54 | 16.08 | 87.49 |
| F1-18 | Scallorn | 0.44 | 0.22 | 2.23 | 0.75 | 0.35 | 25.56 | 27.70 | 26.63 | 189.20 |
| F1-20 | Scallorn | 0.43 | 0.22 | 2.04 | 0.78 | 0.31 | 21.97 | 21.01 | 21.49 | 139.24 |
| F1-34 | Scallorn | 0.59 | 0.30 | 2.05 | 0.79 | 0.23 | 17.12 | 18.73 | 17.93 | 103.28 |
| F1-35 | Scallorn | 0.68 | 0.43 | 2.06 | 0.79 | 0.33 | 15.59 | 14.02 | 14.80 | 85.78 |
| F1-37 | Scallorn | 0.63 | 0.33 | 2.03 | 0.84 | 0.27 | 15.79 | 15.10 | 15.45 | 76.27 |
| F1-39 | Scallorn | 0.63 | 0.34 | 2.14 | 0.71 | 0.27 | 17.71 | 18.44 | 18.07 | 89.19 |
| F1-42 | Scallorn | 0.44 | 0.17 | 2.20 | 0.85 | 0.23 | 26.39 | 26.68 | 26.53 | 216.35 |
| F1-50 | Scallorn | 0.52 | 0.28 | 2.79 | 0.58 | 0.32 | 24.04 | 22.82 | 23.43 | 154.55 |
| F1-81 | Scallorn | 0.66 | 0.27 | 2.19 | 0.71 | 0.16 | 19.24 | 20.33 | 19.79 | 112.99 |
| F1-215 | Scallorn | 0.39 | 0.26 | 2.36 | 0.67 | 0.24 | 17.51 | 17.00 | 17.25 | 107.01 |
| F1-255 | Scallorn | 0.48 | 0.50 | 2.63 | 0.61 | 0.42 | 14.88 | 13.63 | 14.25 | 81.53 |
| F1-271 | Scallorn | 0.65 | 0.19 | 1.81 | 0.99 | 0.24 | 27.25 | 27.26 | 27.25 | 145.46 |
| F1-400 | Scallorn | 0.49 | 0.21 | 2.43 | 0.91 | 0.23 | 20.23 | 20.22 | 20.23 | 113.83 |
| F2-15 | Scallorn | 0.69 | 0.31 | 2.39 | 0.72 | 0.25 | 23.25 | 22.50 | 22.87 | 137.47 |
| F3-5 | Scallorn | 0.90 | 0.22 | 1.55 | 0.81 | 0.32 | 41.09 | 40.96 | 41.02 | 235.19 |

**Table C.5: Ratios, Diagonal Lengths, and Blade Area for Side-Notched Types**

| Point | Type | mwsw | slbl | swnw | nwbw | twmw | diagl | diagr | diagav | area |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-45 | Bayougoula Fishtailed | 0.45 | 0.53 | 2.10 | 0.65 | 0.36 | 24.84 | 24.93 | 24.88 | 168.41 |
| F1-47 | Bayougoula Fishtailed | 0.49 | 0.50 | 1.52 | 0.70 | 0.29 | 22.48 | 23.13 | 22.80 | 173.11 |
| 1386-1 | Collins, *var. Claiborne* | 0.74 | 0.52 | 1.83 | 0.65 | 0.22 | 15.59 | 15.56 | 15.58 | 76.98 |
| 531-1 | Collins, *var. Claiborne* | 0.76 | 0.28 | 1.67 | 0.74 | 0.25 | 27.76 | 27.35 | 27.56 | 181.93 |
| F1-6 | Collins, *var. Claiborne* | 0.79 | 0.32 | 2.32 | 0.73 | 0.28 | 21.81 | 21.50 | 21.65 | 132.05 |
| F1-29 | Collins, *var. Claiborne* | 1.08 | 0.16 | 1.60 | 0.73 | 0.24 | 39.39 | 39.55 | 39.47 | 246.80 |
| F1-52 | Collins, *var. Claiborne* | 0.75 | 0.39 | 1.79 | 0.79 | 0.24 | 19.63 | 19.57 | 19.60 | 102.30 |
| F1-91 | Collins, *var. Claiborne* | 0.76 | 0.23 | 2.13 | 0.85 | 0.22 | 28.53 | 27.93 | 28.23 | 215.15 |
| F1-93 | Collins, *var. Claiborne* | 0.89 | 0.22 | 2.15 | 0.74 | 0.23 | 22.49 | 23.00 | 22.75 | 154.42 |
| F1-112 | Collins, *var. Claiborne* | 0.64 | 0.35 | 1.74 | 0.85 | 0.16 | 23.99 | 22.15 | 23.07 | 159.23 |
| F1-145 | Collins, *var. Claiborne* | 0.65 | 0.32 | 1.38 | 0.95 | 0.23 | 28.66 | 28.89 | 28.78 | 155.79 |
| F1-226 | Collins, *var. Claiborne* | 0.64 | 0.33 | 1.86 | 0.59 | 0.27 | 24.69 | 24.18 | 24.43 | 127.16 |
| F1-259 | Collins, *var. Claiborne* | 0.32 | 0.21 | 3.91 | 0.96 | 0.31 | 31.35 | 30.64 | 31.00 | 337.33 |
| F1-268 | Collins, *var. Claiborne* | 0.59 | 0.64 | 1.72 | 0.76 | 0.48 | 16.42 | 17.31 | 16.87 | 97.44 |
| F1-270 | Collins, *var. Claiborne* | 0.50 | 0.28 | 2.75 | 0.74 | 0.32 | 22.15 | 22.43 | 22.29 | 143.20 |
| F1-298 | Collins, *var. Claiborne* | 0.48 | 0.39 | 1.23 | 0.86 | 0.18 | 21.29 | 19.59 | 20.44 | 105.98 |
| F1-8 | Collins, *var. Clifton* | 0.67 | 0.48 | 1.52 | 0.89 | 0.22 | 16.09 | 14.76 | 15.42 | 83.67 |
| F1-17 | Collins, *var. Clifton* | 0.74 | 0.34 | 1.83 | 0.64 | 0.28 | 17.86 | 17.07 | 17.47 | 81.69 |
| F1-26 | Collins, *var. Clifton* | 0.52 | 0.39 | 1.94 | 0.81 | 0.28 | 13.67 | 14.19 | 13.93 | 77.43 |
| F1-27 | Collins, *var. Clifton* | 0.47 | 0.48 | 1.79 | 0.81 | 0.35 | 13.65 | 14.70 | 14.17 | 78.64 |
| F1-28 | Collins, *var. Clifton* | 0.69 | 0.42 | 1.75 | 0.72 | 0.38 | 13.60 | 12.74 | 13.17 | 57.86 |
| F1-33 | Collins, *var. Clifton* | 0.58 | 0.50 | 1.70 | 0.85 | 0.33 | 14.67 | 14.25 | 14.46 | 81.83 |
| F1-246 | Collins, *var. Clifton* | 0.61 | 0.33 | 1.87 | 0.81 | 0.13 | 16.31 | 16.65 | 16.48 | 94.96 |
| F1-325 | Collins, *var. Clifton* | 0.78 | 0.31 | 1.65 | 0.78 | 0.16 | 21.54 | 21.56 | 21.55 | 105.27 |
| S-2 | Collins, *var. Clifton* | 0.72 | 0.26 | 1.83 | 0.57 | 0.26 | 23.43 | 24.72 | 24.07 | 109.04 |
| S-16 | Collins, *var. Clifton* | 0.71 | 0.31 | 1.75 | 0.95 | 0.31 | 17.67 | 16.50 | 17.09 | 101.30 |
| F1-7 | Collins, *var. Collins* | 0.73 | 0.27 | 1.65 | 0.69 | 0.15 | 23.39 | 20.52 | 21.95 | 146.94 |
| F1-10 | Collins, *var. Collins* | 0.56 | 0.39 | 2.14 | 0.85 | 0.20 | 16.66 | 16.81 | 16.74 | 88.93 |
| F1-25 | Collins, *var. Collins* | 0.51 | 0.38 | 1.74 | 0.67 | 0.30 | 16.48 | 18.13 | 17.31 | 81.44 |
| F1-62 | Collins, *var. Collins* | 0.56 | 0.23 | 1.59 | 0.90 | 0.16 | 24.89 | 22.07 | 23.48 | 131.84 |
| F1-102 | Collins, *var. Collins* | 0.81 | 0.16 | 1.43 | 1.00 | 0.28 | 23.12 | 25.40 | 24.26 | 116.51 |
| F1-123 | Collins, *var. Collins* | 0.63 | 0.28 | 1.71 | 0.72 | 0.35 | 21.74 | 23.57 | 22.66 | 135.20 |
| F1-151 | Collins, *var. Collins* | 0.44 | 0.57 | 1.14 | 0.75 | 0.33 | 12.08 | 13.90 | 12.99 | 64.45 |
| F1-227 | Collins, *var. Collins* | 0.54 | 0.29 | 2.26 | 0.72 | 0.29 | 23.00 | 23.45 | 23.22 | 127.46 |
| F1-277 | Collins, *var. Collins* | 0.54 | 0.39 | 1.91 | 0.75 | 0.26 | 22.42 | 20.27 | 21.34 | 155.26 |

**Table C.5: Ratios, Diagonal Lengths, and Blade Area for Side-Notched Types (continued).**

| Point | Type | mwsw | slbl | swnw | nwbw | twmw | diagl | diagr | diagav | area |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-353 | Collins, *var. Collins* | 0.52 | 0.44 | 1.65 | 0.80 | 0.26 | 16.17 | 15.76 | 15.96 | 77.39 |
| F1-354 | Collins, *var. Collins* | 0.83 | 0.38 | 1.74 | 0.79 | 0.26 | 18.65 | 17.73 | 18.19 | 81.86 |
| F1-368 | Collins, *var. Collins* | 0.67 | 0.40 | 1.99 | 0.60 | 0.36 | 20.72 | 21.20 | 20.96 | 118.13 |
| F1-382 | Collins, *var. Collins* | 0.55 | 0.37 | 1.96 | 0.62 | 0.31 | 21.29 | 20.66 | 20.97 | 124.07 |
| F1-388 | Collins, *var. Collins* | 0.67 | 0.59 | 2.49 | 0.53 | 0.31 | 16.11 | 14.70 | 15.41 | 81.65 |
| F3-31 | Collins, *var. Collins* | 0.55 | 0.38 | 2.19 | 0.48 | 0.21 | 22.56 | 22.93 | 22.74 | 127.91 |
| F5-1 | Collins, *var. Collins* | 0.53 | 0.31 | 2.69 | 0.95 | 0.20 | 26.55 | 25.99 | 26.27 | 236.11 |
| S-4 | Collins, *var. Collins* | 0.48 | 0.25 | 1.83 | 0.69 | 0.30 | 28.92 | 29.47 | 29.20 | 178.39 |
| S-9 | Collins, *var. Collins* | 0.70 | 0.24 | 2.36 | 0.59 | 0.31 | 23.09 | 22.82 | 22.96 | 127.04 |
| S-13 | Collins, *var. Collins* | 0.72 | 0.34 | 1.73 | 0.95 | 0.30 | 17.61 | 16.57 | 17.09 | 98.53 |
| 614-1 | Collins, *var. Serrated* | 0.56 | 0.22 | 1.49 | 0.66 | 0.16 | 29.21 | 31.24 | 30.23 | 168.30 |
| F1-2 | Collins, *var. Serrated* | 0.50 | 0.40 | 1.59 | 0.72 | 0.25 | 22.18 | 23.55 | 22.86 | 144.74 |
| F1-3 | Collins, *var. Serrated* | 0.50 | 0.40 | 2.04 | 0.81 | 0.30 | 17.53 | 19.44 | 18.48 | 113.64 |
| F1-5 | Collins, *var. Serrated* | 0.60 | 0.27 | 1.84 | 0.70 | 0.26 | 28.45 | 27.36 | 27.90 | 169.67 |
| F1-9 | Collins, *var. Serrated* | 0.36 | 0.39 | 1.54 | 0.62 | 0.33 | 17.25 | 17.11 | 17.18 | 72.33 |
| F1-11 | Collins, *var. Serrated* | 0.53 | 0.37 | 2.23 | 0.71 | 0.29 | 15.49 | 16.63 | 16.06 | 95.58 |
| F1-31 | Collins, *var. Serrated* | 0.44 | 0.30 | 1.71 | 0.71 | 0.32 | 22.12 | 22.80 | 22.46 | 101.48 |
| F1-32 | Collins, *var. Serrated* | 0.46 | 0.23 | 2.69 | 0.66 | 0.15 | 26.05 | 24.72 | 25.39 | 140.51 |
| F1-40 | Collins, *var. Serrated* | 0.65 | 0.30 | 2.00 | 0.79 | 0.26 | 16.80 | 16.37 | 16.58 | 100.06 |
| F1-41 | Collins, *var. Serrated* | 0.59 | 0.21 | 1.85 | 0.89 | 0.20 | 21.07 | 19.60 | 20.33 | 108.83 |
| F1-43 | Collins, *var. Serrated* | 0.52 | 0.15 | 1.84 | 0.60 | 0.16 | 34.10 | 34.24 | 34.17 | 214.39 |
| F1-46 | Collins, *var. Serrated* | 0.46 | 0.26 | 1.98 | 0.63 | 0.24 | 33.08 | 31.05 | 32.07 | 224.66 |
| F1-48 | Collins, *var. Serrated* | 0.38 | 0.34 | 1.60 | 0.58 | 0.39 | 25.16 | 25.01 | 25.09 | 120.30 |
| F1-53 | Collins, *var. Serrated* | 0.69 | 0.30 | 1.73 | 0.67 | 0.25 | 19.77 | 20.12 | 19.94 | 98.14 |
| F1-54 | Collins, *var. Serrated* | 0.54 | 0.23 | 1.99 | 0.71 | 0.24 | 24.11 | 24.39 | 24.25 | 140.53 |
| F1-56 | Collins, *var. Serrated* | 0.64 | 0.26 | 1.89 | 0.56 | 0.14 | 32.03 | 32.06 | 32.04 | 200.29 |
| F1-57 | Collins, *var. Serrated* | 0.64 | 0.26 | 1.60 | 0.80 | 0.22 | 25.48 | 25.12 | 25.30 | 148.62 |
| F1-58 | Collins, *var. Serrated* | 0.47 | 0.23 | 1.92 | 0.68 | 0.17 | 30.71 | 29.83 | 30.27 | 156.74 |
| F1-59 | Collins, *var. Serrated* | 0.63 | 0.23 | 2.14 | 0.54 | 0.20 | 25.56 | 25.97 | 25.77 | 132.34 |
| F1-61 | Collins, *var. Serrated* | 0.52 | 0.36 | 2.11 | 0.53 | 0.22 | 26.59 | 27.64 | 27.12 | 147.58 |
| F1-64 | Collins, *var. Serrated* | 0.56 | 0.31 | 1.79 | 0.71 | 0.20 | 25.30 | 23.49 | 24.39 | 149.05 |
| F1-65 | Collins, *var. Serrated* | 0.37 | 0.24 | 2.66 | 0.76 | 0.26 | 26.47 | 27.40 | 26.94 | 205.55 |
| F1-66 | Collins, *var. Serrated* | 0.49 | 0.36 | 1.81 | 0.64 | 0.30 | 19.52 | 20.20 | 19.86 | 109.06 |
| F1-67 | Collins, *var. Serrated* | 0.65 | 0.39 | 1.80 | 0.63 | 0.23 | 23.32 | 21.73 | 22.52 | 103.11 |
| F1-69 | Collins, *var. Serrated* | 0.40 | 0.31 | 1.99 | 0.56 | 0.25 | 25.21 | 25.09 | 25.15 | 159.80 |
| F1-70 | Collins, *var. Serrated* | 0.67 | 0.29 | 1.95 | 0.61 | 0.18 | 23.65 | 24.14 | 23.89 | 141.22 |
| F1-80 | Collins, *var. Serrated* | 0.49 | 0.21 | 1.83 | 0.79 | 0.24 | 35.13 | 35.76 | 35.44 | 177.47 |

**Table C.5: Ratios, Diagonal Lengths, and Blade Area for Side-Notched Types (continued).**

| Point | Type | mwsw | slbl | swnw | nwbw | twmw | diagl | diagr | diagav | area |
|---|---|---|---|---|---|---|---|---|---|---|
| F1-125 | Collins, *var. Serrated* | 0.86 | 0.44 | 1.53 | 0.91 | 0.18 | 16.78 | 15.99 | 16.39 | 81.31 |
| F1-130 | Collins, *var. Serrated* | 0.69 | 0.46 | 1.77 | 0.65 | 0.31 | 17.72 | 15.53 | 16.62 | 105.29 |
| F1-169 | Collins, *var. Serrated* | 0.57 | 0.21 | 1.32 | 0.97 | 0.22 | 31.67 | 31.88 | 31.78 | 219.95 |
| F1-214 | Collins, *var. Serrated* | 0.49 | 0.32 | 2.13 | 0.77 | 0.35 | 19.02 | 18.41 | 18.71 | 112.69 |
| F1-223 | Collins, *var. Serrated* | 0.92 | 0.32 | 1.69 | 0.74 | 0.23 | 28.59 | 24.84 | 26.71 | 187.14 |
| F1-241 | Collins, *var. Serrated* | 0.61 | 0.44 | 1.47 | 0.68 | 0.27 | 12.83 | 13.74 | 13.29 | 58.05 |
| F1-248 | Collins, *var. Serrated* | 0.49 | 0.61 | 2.52 | 0.78 | 0.39 | 11.25 | 12.91 | 12.08 | 61.32 |
| F1-306 | Collins, *var. Serrated* | 0.60 | 0.51 | 1.44 | 0.67 | 0.56 | 12.84 | 12.81 | 12.83 | 54.08 |
| F1-345 | Collins, *var. Serrated* | 0.69 | 0.47 | 1.95 | 0.66 | 0.20 | 20.69 | 20.26 | 20.47 | 105.40 |
| S-3 | Collins, *var. Serrated* | 1.14 | 0.14 | 1.24 | 1.01 | 0.28 | 29.00 | 28.40 | 28.70 | 98.45 |
| S-5 | Collins, *var. Serrated* | 0.47 | 0.22 | 2.44 | 0.93 | 0.18 | 24.60 | 24.91 | 24.76 | 129.67 |
| S-6 | Collins, *var. Serrated* | 0.39 | 0.29 | 1.57 | 0.82 | 0.21 | 18.97 | 19.58 | 19.27 | 99.41 |
| S-8 | Collins, *var. Serrated* | 0.54 | 0.26 | 2.11 | 1.13 | 0.20 | 24.17 | 23.98 | 24.07 | 154.29 |
| S-10 | Collins, *var. Serrated* | 0.50 | 0.21 | 1.95 | 0.68 | 0.23 | 27.53 | 27.74 | 27.64 | 148.16 |
| S-11 | Collins, *var. Serrated* | 0.54 | 0.19 | 1.45 | 0.96 | 0.36 | 28.28 | 27.33 | 27.81 | 117.69 |
| S-15 | Collins, *var. Serrated* | 0.62 | 0.21 | 1.59 | 0.73 | 0.33 | 21.89 | 22.61 | 22.25 | 104.56 |
| 1625-3 | Collins, *var. Unspecified* | 1.02 | 0.34 | 1.44 | 1.53 | 0.30 | 27.38 | 26.61 | 26.99 | 125.74 |
| 469a-1 | Collins, *var. Unspecified* | 0.93 | 0.37 | 1.40 | 0.85 | 0.25 | 19.21 | 20.20 | 19.71 | 82.71 |
| F1-87 | Collins, *var. Unspecified* | 0.86 | 0.27 | 1.16 | 0.80 | 0.21 | 32.29 | 31.80 | 32.04 | 162.83 |
| F1-118 | Collins, *var. Unspecified* | 0.98 | 0.26 | 2.30 | 0.99 | 0.15 | 26.33 | 27.09 | 26.71 | 159.37 |
| F1-175 | Collins, *var. Unspecified* | 0.65 | 0.21 | 2.11 | 1.01 | 0.18 | 26.86 | 27.68 | 27.27 | 184.99 |
| F1-185 | Collins, *var. Unspecified* | 0.39 | 0.22 | 1.81 | 0.83 | 0.33 | 19.12 | 18.49 | 18.81 | 106.74 |
| F1-415 | Collins, *var. Unspecified* | 0.52 | 0.37 | 2.49 | 0.80 | 0.19 | 18.14 | 18.38 | 18.26 | 119.10 |
| F1-19 | Morris | 0.68 | 0.29 | 1.66 | 0.82 | 0.25 | 15.40 | 15.96 | 15.68 | 78.95 |
| F1-68 | Morris | 0.53 | 0.17 | 2.08 | 0.59 | 0.24 | 29.40 | 29.41 | 29.41 | 173.42 |
| F1-222 | Morris | 0.51 | 0.44 | 1.20 | 0.79 | 0.31 | 14.65 | 14.75 | 14.70 | 54.44 |
| F1-274 | Morris | 0.43 | 0.23 | 2.20 | 0.90 | 0.27 | 22.55 | 20.53 | 21.54 | 136.08 |
| F1-275 | Morris | 0.97 | 0.27 | 1.17 | 0.83 | 0.48 | 25.48 | 25.14 | 25.31 | 104.01 |
| S-7 | Morris | 0.71 | 0.42 | 1.87 | 0.58 | 0.32 | 18.17 | 18.28 | 18.23 | 79.76 |

**Table C.6: Tip, Notch, Base Ear, and Base Angles for Corner-Notched Types.**

| Point | Type | Angle Alk | Angle Aef | Angle A | Angle I | Angle J | Angle IJ | Angle G | Angle H | Angle GH | Angle D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-13 | Alba | 56.53 | 56.41 | 56.47 | 114.25 | 119.95 | 117.10 | 116.21 | 120.41 | 118.31 | 131.82 |
| F1-15 | Alba | 53.66 | 52.01 | 52.83 | 113.02 | 91.93 | 102.47 | 107.87 | 107.35 | 107.61 | 118.72 |
| F1-82 | Alba | 69.25 | 64.14 | 66.70 | 97.18 | 102.09 | 99.64 | 79.11 | 93.68 | 86.39 | 168.89 |
| F1-265 | Alba | 46.62 | 29.97 | 38.30 | 115.95 | 123.07 | 119.51 | 82.42 | 93.09 | 87.75 | 162.43 |
| PL8-7 | Alba | 52.16 | 41.79 | 46.98 | 128.85 | 115.55 | 122.20 | 97.89 | 85.52 | 91.70 | 162.72 |
| F1-23 | Colbert | 52.63 | 50.94 | 51.79 | 90.96 | 90.15 | 90.56 | 92.10 | 98.20 | 95.15 | 143.86 |
| F1-36 | Colbert | 71.11 | 55.00 | 63.05 | 85.09 | 94.57 | 89.83 | 84.16 | 91.77 | 87.97 | 131.43 |
| F1-38 | Colbert | 42.42 | 45.91 | 44.16 | 85.56 | 90.42 | 87.99 | 105.16 | 91.98 | 98.57 | 140.15 |
| F1-44 | Colbert | 31.54 | 35.36 | 33.45 | 88.75 | 87.75 | 88.25 | 98.50 | 100.90 | 99.70 | 130.60 |
| F1-99 | Colbert | 40.65 | 37.93 | 39.29 | 99.35 | 106.27 | 102.81 | 98.79 | 91.50 | 95.14 | 135.57 |
| F1-234 | Colbert | 30.53 | 20.96 | 25.74 | 141.35 | 120.92 | 131.14 | 90.95 | 91.03 | 90.99 | 127.95 |
| F1-257 | Colbert | 53.10 | 28.14 | 40.62 | 117.25 | 119.70 | 118.47 | 81.94 | 66.07 | 74.00 | 164.95 |
| F2-16 | Colbert | 50.97 | 47.49 | 49.23 | 70.65 | 80.65 | 75.65 | 82.22 | 98.13 | 90.17 | 132.29 |
| F3-4 | Colbert | 29.66 | 30.93 | 30.30 | 105.49 | 76.67 | 91.08 | 83.07 | 71.89 | 77.48 | 179.36 |
| 383-1 | Scallorn | 55.16 | 44.70 | 49.93 | 104.41 | 74.31 | 89.36 | 77.79 | 78.22 | 78.01 | 161.45 |
| F1-18 | Scallorn | 29.18 | 32.45 | 30.82 | 99.55 | 82.88 | 91.21 | 70.20 | 83.13 | 76.67 | 171.85 |
| F1-20 | Scallorn | 34.00 | 38.03 | 36.02 | 74.29 | 67.23 | 70.76 | 76.93 | 66.78 | 71.85 | 145.80 |
| F1-34 | Scallorn | 49.51 | 41.31 | 45.41 | 96.98 | 75.02 | 86.00 | 89.42 | 87.73 | 88.57 | 147.02 |
| F1-35 | Scallorn | 70.77 | 53.12 | 61.95 | 83.23 | 97.60 | 90.41 | 90.57 | 89.89 | 90.23 | 145.74 |
| F1-37 | Scallorn | 50.20 | 40.06 | 45.13 | 94.06 | 109.32 | 101.69 | 101.36 | 89.70 | 95.53 | 146.40 |
| F1-39 | Scallorn | 48.76 | 36.39 | 42.58 | 71.83 | 50.47 | 61.15 | 95.50 | 86.12 | 90.81 | 134.78 |
| F1-42 | Scallorn | 29.62 | 35.64 | 32.63 | 113.70 | 93.84 | 103.77 | 89.21 | 80.94 | 85.08 | 165.66 |
| F1-50 | Scallorn | 39.65 | 36.19 | 37.92 | 51.70 | 71.60 | 61.65 | 77.67 | 79.42 | 78.54 | 148.70 |
| F1-81 | Scallorn | 48.53 | 36.62 | 42.58 | 91.15 | 68.41 | 79.78 | 74.71 | 76.16 | 75.44 | 166.22 |
| F1-215 | Scallorn | 31.88 | 42.87 | 37.38 | 103.28 | 117.61 | 110.44 | 47.91 | 52.99 | 50.45 | 139.86 |
| F1-255 | Scallorn | 57.04 | 57.24 | 57.14 | 72.95 | 72.71 | 72.83 | 76.41 | 80.55 | 78.48 | 142.06 |
| F1-271 | Scallorn | 29.31 | 22.90 | 26.10 | 158.80 | 127.77 | 143.29 | 73.64 | 83.70 | 78.67 | 159.86 |
| F1-400 | Scallorn | 31.51 | 32.88 | 32.20 | 102.03 | 110.96 | 106.50 | 110.38 | 106.96 | 108.67 | 112.13 |
| F2-15 | Scallorn | 49.31 | 34.29 | 41.80 | 83.71 | 73.32 | 78.51 | 88.40 | 83.88 | 86.14 | 143.99 |
| F3-5 | Scallorn | 27.96 | 16.01 | 21.99 | 142.01 | 125.46 | 133.74 | 108.10 | 90.03 | 99.06 | 143.89 |

**Table C.7: Tip, Notch, Base Ear, and Base Angles for Side-Notched Types**

| Point | Type | Angle Alk | Angle Aef | Angle A | Angle I | Angle J | Angle IJ | Angle G | Angle H | Angle GH | Angle D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-45 | Bayougoula Fishtailed | 29.49 | 32.81 | 31.15 | 124.10 | 140.49 | 132.30 | 60.61 | 67.45 | 64.03 | 179.59 |
| F1-47 | Bayougoula Fishtailed | 40.67 | 41.45 | 41.06 | 125.54 | 113.96 | 119.75 | 59.33 | 52.92 | 56.12 | 167.73 |
| 1386-1 | Collins, *var. Claiborne* | 56.06 | 38.62 | 47.34 | 132.19 | 119.55 | 125.87 | 79.96 | 64.06 | 72.01 | 178.74 |
| 531-1 | Collins, *var. Claiborne* | 41.18 | 28.12 | 34.65 | 128.47 | 119.08 | 123.77 | 81.36 | 67.89 | 74.63 | 173.09 |
| F1-6 | Collins, *var. Claiborne* | 52.44 | 34.34 | 43.39 | 124.02 | 93.81 | 108.91 | 78.34 | 68.96 | 73.65 | 158.05 |
| F1-29 | Collins, *var. Claiborne* | 36.82 | 18.11 | 27.46 | 127.57 | 118.42 | 123.00 | 59.68 | 66.51 | 63.10 | 178.41 |
| F1-52 | Collins, *var. Claiborne* | 45.71 | 31.90 | 38.80 | 130.85 | 114.01 | 122.43 | 108.29 | 89.39 | 98.84 | 131.37 |
| F1-91 | Collins, *var. Claiborne* | 47.46 | 32.40 | 39.93 | 112.34 | 112.17 | 112.26 | 82.79 | 84.02 | 83.40 | 158.43 |
| F1-93 | Collins, *var. Claiborne* | 61.92 | 36.51 | 49.22 | 118.30 | 88.28 | 103.29 | 67.70 | 42.24 | 54.97 | 159.17 |
| F1-112 | Collins, *var. Claiborne* | 45.47 | 36.13 | 40.80 | 119.95 | 123.68 | 121.81 | 93.36 | 77.08 | 85.22 | 141.36 |
| F1-145 | Collins, *var. Claiborne* | 28.30 | 22.06 | 25.18 | 151.33 | 171.38 | 161.36 | 88.35 | 110.19 | 99.27 | 154.33 |
| F1-226 | Collins, *var. Claiborne* | 32.55 | 25.56 | 29.05 | 96.73 | 116.20 | 106.47 | 85.40 | 71.54 | 78.47 | 153.90 |
| F1-259 | Collins, *var. Claiborne* | 28.09 | 43.46 | 35.77 | 109.00 | 102.25 | 105.63 | 88.04 | 100.06 | 94.05 | 163.33 |
| F1-268 | Collins, *var. Claiborne* | 50.52 | 43.45 | 46.99 | 138.08 | 131.46 | 134.77 | 91.48 | 81.24 | 86.36 | 159.46 |
| F1-270 | Collins, *var. Claiborne* | 36.98 | 36.32 | 36.65 | 91.24 | 98.30 | 94.77 | 86.14 | 70.71 | 78.43 | 165.87 |
| F1-298 | Collins, *var. Claiborne* | 28.42 | 29.61 | 29.02 | 136.08 | 148.79 | 142.43 | 96.70 | 100.87 | 98.79 | 124.81 |
| F1-8 | Collins, *var. Clifton* | 55.95 | 43.41 | 49.68 | 131.14 | 145.44 | 138.29 | 98.41 | 91.79 | 95.10 | 151.94 |
| F1-17 | Collins, *var. Clifton* | 46.76 | 32.10 | 39.43 | 93.95 | 95.35 | 94.65 | 80.37 | 85.50 | 82.93 | 132.73 |
| F1-26 | Collins, *var. Clifton* | 45.69 | 48.44 | 47.07 | 122.01 | 113.04 | 117.53 | 84.86 | 74.27 | 79.57 | 179.51 |
| F1-27 | Collins, *var. Clifton* | 49.03 | 51.79 | 50.41 | 111.32 | 108.15 | 109.73 | 85.50 | 96.03 | 90.77 | 145.45 |
| F1-28 | Collins, *var. Clifton* | 53.32 | 40.39 | 46.86 | 109.14 | 125.94 | 117.54 | 82.34 | 81.12 | 81.73 | 156.04 |
| F1-33 | Collins, *var. Clifton* | 48.99 | 46.86 | 47.92 | 117.98 | 121.34 | 119.66 | 117.35 | 117.02 | 117.18 | 103.89 |
| F1-246 | Collins, *var. Clifton* | 47.55 | 41.55 | 44.55 | 108.71 | 128.25 | 118.48 | 84.00 | 80.98 | 82.49 | 172.43 |
| F1-325 | Collins, *var. Clifton* | 41.16 | 27.10 | 34.13 | 125.72 | 133.09 | 129.40 | 77.51 | 78.82 | 78.16 | 171.01 |
| S-2 | Collins, *var. Clifton* | 31.70 | 21.98 | 26.84 | 119.70 | 108.75 | 114.22 | 59.41 | 58.45 | 58.93 | 170.06 |
| S-16 | Collins, *var. Clifton* | 57.37 | 42.67 | 50.02 | 108.23 | 133.26 | 120.75 | 88.57 | 101.56 | 95.07 | 148.64 |
| F1-7 | Collins, *var. Collins* | 47.20 | 34.63 | 40.92 | 107.00 | 125.72 | 116.36 | 58.01 | 67.18 | 62.60 | 167.96 |
| F1-10 | Collins, *var. Collins* | 45.21 | 39.88 | 42.54 | 114.88 | 113.06 | 113.97 | 103.55 | 96.78 | 100.16 | 137.37 |
| F1-25 | Collins, *var. Collins* | 32.98 | 32.45 | 32.71 | 111.38 | 125.18 | 118.28 | 67.27 | 73.57 | 70.42 | 160.29 |
| F1-62 | Collins, *var. Collins* | 31.28 | 27.39 | 29.33 | 121.29 | 146.98 | 134.13 | 72.78 | 88.59 | 80.68 | 173.61 |
| F1-102 | Collins, *var. Collins* | 36.13 | 22.58 | 29.36 | 133.07 | 145.72 | 139.39 | 91.27 | 116.49 | 103.88 | 157.38 |
| F1-123 | Collins, *var. Collins* | 40.35 | 31.72 | 36.04 | 115.51 | 119.51 | 117.51 | 55.40 | 62.61 | 59.00 | 153.18 |
| F1-151 | Collins, *var. Collins* | 45.40 | 49.15 | 47.27 | 131.17 | 146.51 | 138.84 | 62.75 | 85.40 | 74.07 | 169.49 |
| F1-227 | Collins, *var. Collins* | 34.16 | 29.96 | 32.06 | 68.14 | 72.75 | 70.45 | 89.19 | 99.30 | 94.25 | 124.58 |
| F1-277 | Collins, *var. Collins* | 44.68 | 41.88 | 43.28 | 96.84 | 104.38 | 100.61 | 81.40 | 89.35 | 85.38 | 130.77 |

**Table C.7: Tip, Notch, Base Ear, and Base Angles for Side-Notched Types (continued).**

| Point | Type | Angle Alk | Angle Aef | Angle A | Angle I | Angle J | Angle IJ | Angle G | Angle H | Angle GH | Angle D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-353 | Collins, *var. Collins* | 38.23 | 36.74 | 37.49 | 142.49 | 126.24 | 134.36 | 86.51 | 73.64 | 80.08 | 178.32 |
| F1-354 | Collins, *var. Collins* | 45.40 | 28.66 | 37.03 | 139.26 | 143.94 | 141.60 | 70.57 | 94.10 | 82.33 | 176.44 |
| F1-368 | Collins, *var. Collins* | 42.49 | 32.52 | 37.50 | 113.46 | 120.85 | 117.16 | 64.04 | 69.33 | 66.69 | 177.00 |
| F1-382 | Collins, *var. Collins* | 40.50 | 35.71 | 38.10 | 80.15 | 81.55 | 80.85 | 75.68 | 80.01 | 77.84 | 147.55 |
| F1-388 | Collins, *var. Collins* | 63.67 | 46.80 | 55.24 | 70.94 | 94.73 | 82.84 | 75.03 | 83.44 | 79.24 | 141.53 |
| F3-31 | Collins, *var. Collins* | 34.01 | 30.30 | 32.15 | 93.43 | 103.13 | 98.28 | 58.26 | 62.95 | 60.61 | 169.57 |
| F5-1 | Collins, *var. Collins* | 40.76 | 40.71 | 40.74 | 130.43 | 105.93 | 118.18 | 118.28 | 110.11 | 114.20 | 126.05 |
| S-4 | Collins, *var. Collins* | 24.67 | 25.26 | 24.96 | 103.73 | 107.10 | 105.42 | 68.26 | 75.32 | 71.79 | 170.71 |
| S-9 | Collins, *var. Collins* | 39.80 | 28.87 | 34.33 | 79.45 | 113.51 | 96.48 | 63.11 | 59.30 | 61.21 | 177.91 |
| S-13 | Collins, *var. Collins* | 58.57 | 42.31 | 50.44 | 110.17 | 133.91 | 122.04 | 92.41 | 103.61 | 98.01 | 144.88 |
| 614-1 | Collins, *var. Serrated* | 23.56 | 21.12 | 22.34 | 130.14 | 117.64 | 123.89 | 67.80 | 51.30 | 59.55 | 177.07 |
| F1-2 | Collins, *var. Serrated* | 32.21 | 33.22 | 32.71 | 111.67 | 136.21 | 123.94 | 74.11 | 79.42 | 76.76 | 150.54 |
| F1-3 | Collins, *var. Serrated* | 37.73 | 39.51 | 38.62 | 126.49 | 141.68 | 134.09 | 62.60 | 86.51 | 74.56 | 175.72 |
| F1-5 | Collins, *var. Serrated* | 31.19 | 25.71 | 28.45 | 115.02 | 113.46 | 114.24 | 76.86 | 72.66 | 74.76 | 176.08 |
| F1-9 | Collins, *var. Serrated* | 20.91 | 29.11 | 25.01 | 110.27 | 136.37 | 123.32 | 71.40 | 70.32 | 70.86 | 169.03 |
| F1-11 | Collins, *var. Serrated* | 48.50 | 46.95 | 47.73 | 89.55 | 93.60 | 91.58 | 88.89 | 81.56 | 85.23 | 145.50 |
| F1-31 | Collins, *var. Serrated* | 21.18 | 23.61 | 22.39 | 126.22 | 119.02 | 122.62 | 80.89 | 70.87 | 75.88 | 177.18 |
| F1-32 | Collins, *var. Serrated* | 23.02 | 25.17 | 24.09 | 89.05 | 116.08 | 102.57 | 90.96 | 83.78 | 87.37 | 144.55 |
| F1-40 | Collins, *var. Serrated* | 49.42 | 42.39 | 45.91 | 112.36 | 127.65 | 120.00 | 74.57 | 74.58 | 74.58 | 173.56 |
| F1-41 | Collins, *var. Serrated* | 34.14 | 30.13 | 32.13 | 125.01 | 125.16 | 125.09 | 94.14 | 77.21 | 85.68 | 170.68 |
| F1-43 | Collins, *var. Serrated* | 21.88 | 21.28 | 21.58 | 94.01 | 80.06 | 87.04 | 63.91 | 47.24 | 55.57 | 165.67 |
| F1-46 | Collins, *var. Serrated* | 22.34 | 24.90 | 23.62 | 103.54 | 113.96 | 108.75 | 84.54 | 72.80 | 78.67 | 152.24 |
| F1-48 | Collins, *var. Serrated* | 16.86 | 22.23 | 19.54 | 121.39 | 122.87 | 122.13 | 67.85 | 73.23 | 70.54 | 167.43 |
| F1-53 | Collins, *var. Serrated* | 37.51 | 28.50 | 33.01 | 108.27 | 123.45 | 115.86 | 65.57 | 86.72 | 76.14 | 163.13 |
| F1-54 | Collins, *var. Serrated* | 30.41 | 28.35 | 29.38 | 88.73 | 81.51 | 85.12 | 74.25 | 77.44 | 75.84 | 129.63 |
| F1-56 | Collins, *var. Serrated* | 28.52 | 22.71 | 25.62 | 102.28 | 100.27 | 101.28 | 64.52 | 59.49 | 62.00 | 148.67 |
| F1-57 | Collins, *var. Serrated* | 34.13 | 27.41 | 30.77 | 133.87 | 125.75 | 129.81 | 77.43 | 70.20 | 73.82 | 177.18 |
| F1-58 | Collins, *var. Serrated* | 18.55 | 19.70 | 19.13 | 120.48 | 131.11 | 125.79 | 63.81 | 82.42 | 73.12 | 178.54 |
| F1-59 | Collins, *var. Serrated* | 28.08 | 23.07 | 25.58 | 94.12 | 106.49 | 100.31 | 58.52 | 65.43 | 61.98 | 165.45 |
| F1-61 | Collins, *var. Serrated* | 25.95 | 24.32 | 25.13 | 108.03 | 107.99 | 108.01 | 75.30 | 61.74 | 68.52 | 158.49 |
| F1-64 | Collins, *var. Serrated* | 32.95 | 29.68 | 31.32 | 110.29 | 119.45 | 114.87 | 67.77 | 76.26 | 72.02 | 165.01 |
| F1-65 | Collins, *var. Serrated* | 24.57 | 34.15 | 29.36 | 105.23 | 88.64 | 96.94 | 87.04 | 84.10 | 85.57 | 156.13 |
| F1-66 | Collins, *var. Serrated* | 32.51 | 33.02 | 32.76 | 100.00 | 125.89 | 112.94 | 63.57 | 79.09 | 71.33 | 157.72 |
| F1-67 | Collins, *var. Serrated* | 28.74 | 22.85 | 25.79 | 138.13 | 139.37 | 138.75 | 69.18 | 69.84 | 69.51 | 174.63 |
| F1-69 | Collins, *var. Serrated* | 24.26 | 30.38 | 27.32 | 97.66 | 97.95 | 97.80 | 65.53 | 59.24 | 62.39 | 169.70 |
| F1-70 | Collins, *var. Serrated* | 38.71 | 29.54 | 34.13 | 108.09 | 102.00 | 105.05 | 61.32 | 63.09 | 62.20 | 173.32 |
| F1-80 | Collins, *var. Serrated* | 15.90 | 16.27 | 16.09 | 149.85 | 113.39 | 131.62 | 99.58 | 83.09 | 91.34 | 138.65 |

**Table C.7: Tip, Notch, Base Ear, and Base Angles for Side-Notched Types (continued).**

| Point | Type | Angle Alk | Angle Aef | Angle A | Angle I | Angle J | Angle IJ | Angle G | Angle H | Angle GH | Angle D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-125 | Collins, *var. Serrated* | 59.81 | 37.20 | 48.50 | 122.72 | 161.20 | 141.96 | 79.77 | 98.61 | 89.19 | 166.53 |
| F1-130 | Collins, *var. Serrated* | 59.46 | 45.96 | 52.71 | 110.98 | 117.57 | 114.28 | 77.28 | 64.40 | 70.84 | 169.99 |
| F1-169 | Collins, *var. Serrated* | 28.69 | 25.48 | 27.08 | 153.43 | 121.15 | 137.29 | 111.16 | 113.62 | 112.39 | 128.17 |
| F1-214 | Collins, *var. Serrated* | 45.80 | 43.63 | 44.71 | 68.76 | 66.87 | 67.81 | 88.39 | 78.87 | 83.63 | 134.82 |
| F1-223 | Collins, *var. Serrated* | 50.65 | 28.68 | 39.66 | 137.03 | 131.64 | 134.33 | 72.14 | 77.01 | 74.57 | 166.62 |
| F1-241 | Collins, *var. Serrated* | 48.14 | 40.33 | 44.24 | 124.03 | 127.40 | 125.72 | 59.88 | 71.57 | 65.72 | 177.56 |
| F1-248 | Collins, *var. Serrated* | 69.27 | 65.67 | 67.47 | 103.12 | 95.66 | 99.39 | 89.50 | 68.86 | 79.18 | 176.04 |
| F1-306 | Collins, *var. Serrated* | 49.60 | 42.06 | 45.83 | 118.23 | 118.24 | 118.23 | 70.14 | 70.15 | 70.14 | 176.75 |
| F1-345 | Collins, *var. Serrated* | 38.25 | 29.10 | 33.68 | 137.96 | 129.45 | 133.70 | 86.23 | 107.99 | 97.11 | 137.79 |
| S-3 | Collins, *var. Serrated* | 30.70 | 13.75 | 22.22 | 168.33 | 162.23 | 165.28 | 87.07 | 77.31 | 82.19 | 161.44 |
| S-5 | Collins, *var. Serrated* | 23.61 | 25.10 | 24.36 | 137.12 | 110.18 | 123.65 | 95.49 | 87.93 | 91.71 | 167.66 |
| S-6 | Collins, *var. Serrated* | 25.18 | 32.22 | 28.70 | 136.19 | 131.51 | 133.85 | 72.03 | 62.16 | 67.09 | 157.60 |
| S-8 | Collins, *var. Serrated* | 33.91 | 31.79 | 32.85 | 115.51 | 130.74 | 123.12 | 88.44 | 95.11 | 91.78 | 163.38 |
| S-10 | Collins, *var. Serrated* | 23.17 | 22.94 | 23.06 | 108.69 | 104.66 | 106.68 | 74.14 | 55.25 | 64.70 | 174.28 |
| S-11 | Collins, *var. Serrated* | 19.32 | 17.68 | 18.50 | 146.95 | 136.49 | 141.72 | 92.92 | 92.59 | 92.76 | 169.31 |
| S-15 | Collins, *var. Serrated* | 29.96 | 24.76 | 27.36 | 127.45 | 109.21 | 118.33 | 62.05 | 69.41 | 65.73 | 176.84 |
| 1625-3 | Collins, *var. Unspecified* | 40.02 | 20.61 | 30.32 | 160.82 | 178.63 | 169.73 | 133.06 | 109.94 | 121.50 | 146.60 |
| 469a-1 | Collins, *var. Unspecified* | 41.55 | 24.85 | 33.20 | 118.14 | 169.77 | 143.95 | 94.88 | 102.63 | 98.75 | 137.37 |
| F1-87 | Collins, *var. Unspecified* | 30.72 | 18.27 | 24.50 | 170.01 | 139.77 | 154.89 | 87.87 | 77.90 | 82.88 | 166.21 |
| F1-118 | Collins, *var. Unspecified* | 48.75 | 26.19 | 37.47 | 124.32 | 136.21 | 130.26 | 100.29 | 99.12 | 99.71 | 158.38 |
| F1-175 | Collins, *var. Unspecified* | 37.34 | 29.41 | 33.38 | 124.85 | 141.15 | 133.00 | 91.89 | 114.45 | 103.17 | 151.47 |
| F1-185 | Collins, *var. Unspecified* | 28.16 | 36.40 | 32.28 | 117.56 | 122.64 | 120.10 | 60.81 | 62.77 | 61.79 | 154.81 |
| F1-415 | Collins, *var. Unspecified* | 50.73 | 47.63 | 49.18 | 87.38 | 94.08 | 90.73 | 85.91 | 95.26 | 90.58 | 156.41 |
| F1-19 | Morris | 47.52 | 37.68 | 42.60 | 136.77 | 98.40 | 117.58 | 72.18 | 68.57 | 70.38 | 159.03 |
| F1-68 | Morris | 25.58 | 23.96 | 24.77 | 80.60 | 101.90 | 91.25 | 41.12 | 48.20 | 44.66 | 159.33 |
| F1-222 | Morris | 34.49 | 32.29 | 33.39 | 148.76 | 140.32 | 144.54 | 76.55 | 64.43 | 70.49 | 178.62 |
| F1-274 | Morris | 30.25 | 35.02 | 32.63 | 121.00 | 122.60 | 121.80 | 67.48 | 91.04 | 79.26 | 170.35 |
| F1-275 | Morris | 35.58 | 18.86 | 27.22 | 158.96 | 133.82 | 146.39 | 117.37 | 91.82 | 104.59 | 115.42 |
| S-7 | Morris | 40.01 | 28.61 | 34.31 | 116.64 | 118.79 | 117.71 | 81.32 | 68.89 | 75.10 | 150.01 |

**Table C.8: Shoulder Angles for Corner-Notched Points.**

| Point | Type | Angle Eck | Angle Fcl | Angle EFcmid | Angle Eca | Angle Fca | Angle EFca | Angle Eik | Angle Fil | Angle EF-notmid | Angle Eia | Angle Fja | Angle EFnota |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-13 | Alba | 69.53 | 72.65 | 71.09 | 67.71 | 74.45 | 71.08 | 83.69 | 85.69 | 84.69 | 81.87 | 87.49 | 84.68 |
| F1-15 | Alba | 69.71 | 64.01 | 66.86 | 69.08 | 62.94 | 66.01 | 97.75 | 82.96 | 90.36 | 97.12 | 81.89 | 89.50 |
| F1-82 | Alba | 57.07 | 53.08 | 55.08 | 55.41 | 49.91 | 52.66 | 81.18 | 77.10 | 79.14 | 79.53 | 73.92 | 76.73 |
| F1-265 | Alba | 76.42 | 97.31 | 86.86 | 69.31 | 85.71 | 77.51 | 113.41 | 136.40 | 124.90 | 106.30 | 124.80 | 115.55 |
| PL8-7 | Alba | 81.86 | 75.85 | 78.85 | 76.82 | 68.98 | 72.90 | 119.26 | 109.13 | 114.19 | 114.23 | 102.25 | 108.24 |
| F1-23 | Colbert | 62.06 | 65.74 | 63.90 | 59.95 | 66.25 | 63.10 | 75.40 | 82.20 | 78.80 | 73.30 | 82.72 | 78.01 |
| F1-36 | Colbert | 69.78 | 77.12 | 73.45 | 59.75 | 67.74 | 63.74 | 90.93 | 105.79 | 98.36 | 80.90 | 96.40 | 88.65 |
| F1-38 | Colbert | 63.93 | 59.09 | 61.51 | 67.30 | 59.05 | 63.18 | 73.52 | 75.92 | 74.72 | 76.90 | 75.88 | 76.39 |
| F1-44 | Colbert | 73.32 | 69.68 | 71.50 | 75.39 | 71.36 | 73.38 | 84.25 | 83.13 | 83.69 | 86.32 | 84.82 | 85.57 |
| F1-99 | Colbert | 73.01 | 86.49 | 79.75 | 72.09 | 84.29 | 78.19 | 91.93 | 113.03 | 102.48 | 91.01 | 110.83 | 100.92 |
| F1-234 | Colbert | 101.51 | 75.49 | 88.50 | 94.25 | 72.57 | 83.41 | 165.70 | 135.87 | 150.78 | 158.44 | 132.95 | 145.70 |
| F1-257 | Colbert | 98.09 | 87.76 | 92.92 | 80.03 | 77.20 | 78.62 | 144.48 | 139.98 | 142.23 | 126.42 | 129.43 | 127.93 |
| F2-16 | Colbert | 59.22 | 61.61 | 60.42 | 58.63 | 58.92 | 58.77 | 77.04 | 77.41 | 77.22 | 76.45 | 74.71 | 75.58 |
| F3-4 | Colbert | 75.16 | 61.68 | 68.42 | 77.56 | 60.66 | 69.11 | 94.30 | 79.95 | 87.13 | 96.70 | 78.94 | 87.82 |
| 383-1 | Scallorn | 70.43 | 65.58 | 68.01 | 65.90 | 58.88 | 62.39 | 106.63 | 81.15 | 93.89 | 102.09 | 74.46 | 88.28 |
| F1-18 | Scallorn | 76.86 | 62.89 | 69.87 | 79.15 | 63.81 | 71.48 | 99.36 | 82.23 | 90.79 | 101.65 | 83.15 | 92.40 |
| F1-20 | Scallorn | 61.87 | 67.70 | 64.79 | 62.79 | 70.74 | 66.76 | 81.27 | 88.77 | 85.02 | 82.18 | 91.80 | 86.99 |
| F1-34 | Scallorn | 77.03 | 61.53 | 69.28 | 71.29 | 58.88 | 65.09 | 100.46 | 74.44 | 87.45 | 94.73 | 71.79 | 83.26 |
| F1-35 | Scallorn | 64.58 | 74.87 | 69.73 | 54.04 | 66.30 | 60.17 | 80.77 | 99.83 | 90.30 | 70.23 | 91.27 | 80.75 |
| F1-37 | Scallorn | 70.03 | 78.29 | 74.16 | 65.41 | 72.30 | 68.85 | 81.91 | 114.58 | 98.24 | 77.28 | 108.58 | 92.93 |
| F1-39 | Scallorn | 67.84 | 59.82 | 63.83 | 60.34 | 55.91 | 58.13 | 76.90 | 64.03 | 70.47 | 69.40 | 60.12 | 64.76 |
| F1-42 | Scallorn | 81.08 | 76.17 | 78.62 | 83.40 | 80.37 | 81.89 | 99.21 | 90.36 | 94.78 | 101.54 | 94.55 | 98.05 |
| F1-50 | Scallorn | 59.70 | 69.91 | 64.81 | 58.53 | 67.86 | 63.19 | 66.54 | 78.01 | 72.28 | 65.37 | 75.96 | 70.67 |
| F1-81 | Scallorn | 74.96 | 68.01 | 71.48 | 70.24 | 60.92 | 65.58 | 96.25 | 81.40 | 88.82 | 91.54 | 74.31 | 82.92 |
| F1-215 | Scallorn | 67.44 | 74.85 | 71.14 | 74.29 | 79.31 | 76.80 | 93.78 | 111.89 | 102.83 | 100.63 | 116.34 | 108.48 |
| F1-255 | Scallorn | 51.73 | 60.00 | 55.87 | 51.30 | 60.78 | 56.04 | 74.09 | 74.96 | 74.52 | 73.66 | 75.73 | 74.70 |
| F1-271 | Scallorn | 83.85 | 83.67 | 83.76 | 80.60 | 80.26 | 80.43 | 137.68 | 135.18 | 136.43 | 134.43 | 131.76 | 133.10 |
| F1-400 | Scallorn | 78.32 | 77.17 | 77.75 | 78.33 | 78.56 | 78.44 | 100.59 | 108.66 | 104.62 | 100.60 | 110.05 | 105.32 |
| F2-15 | Scallorn | 63.30 | 71.33 | 67.32 | 57.17 | 63.52 | 60.34 | 88.93 | 91.48 | 90.20 | 82.80 | 83.67 | 83.23 |
| F3-5 | Scallorn | 94.10 | 93.37 | 93.73 | 86.81 | 88.04 | 87.42 | 143.51 | 138.55 | 141.03 | 136.22 | 133.23 | 134.72 |

**Table C.9: Shoulder Angles for Side-Notched Points**

| Point | Type | Angle Eck | Angle Fcl | Angle EFcmid | Angle Eca | Angle Fca | Angle EFca | Angle Eik | Angle Fil | Angle EFnot mid | Angle Eia | Angle Fja | Angle EFnota |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-45 | Bayougoula Fishtailed | 73.92 | 71.54 | 72.73 | 74.76 | 73.99 | 74.37 | 137.48 | 142.55 | 140.02 | 138.32 | 145.00 | 141.66 |
| F1-47 | Bayougoula Fishtailed | 75.44 | 64.49 | 69.96 | 72.47 | 67.91 | 70.19 | 148.69 | 128.93 | 138.81 | 145.72 | 132.35 | 139.04 |
| 1386-1 | Collins, *var. Claiborne* | 85.43 | 79.54 | 82.48 | 73.43 | 73.05 | 73.24 | 138.37 | 127.94 | 133.16 | 126.37 | 121.46 | 123.92 |
| 531-1 | Collins, *var. Claiborne* | 82.19 | 91.76 | 86.98 | 77.92 | 81.46 | 79.69 | 125.55 | 146.11 | 135.83 | 121.28 | 135.80 | 128.54 |
| F1-6 | Collins, *var. Claiborne* | 81.32 | 83.47 | 82.39 | 71.13 | 73.80 | 72.47 | 129.48 | 128.49 | 128.99 | 119.30 | 118.83 | 119.06 |
| F1-29 | Collins, *var. Claiborne* | 100.84 | 96.34 | 98.59 | 89.82 | 86.33 | 88.08 | 159.01 | 145.29 | 152.15 | 147.99 | 135.29 | 141.64 |
| F1-52 | Collins, *var. Claiborne* | 82.75 | 83.84 | 83.30 | 75.34 | 75.80 | 75.57 | 124.48 | 134.89 | 129.68 | 117.07 | 126.85 | 121.96 |
| F1-91 | Collins, *var. Claiborne* | 85.32 | 80.91 | 83.11 | 73.04 | 77.09 | 75.06 | 123.11 | 119.87 | 121.49 | 110.83 | 116.05 | 113.44 |
| F1-93 | Collins, *var. Claiborne* | 87.68 | 85.35 | 86.52 | 74.24 | 70.31 | 72.27 | 123.12 | 124.66 | 123.89 | 109.67 | 109.62 | 109.65 |
| F1-112 | Collins, *var. Claiborne* | 71.03 | 86.35 | 78.69 | 66.61 | 80.76 | 73.69 | 126.60 | 139.11 | 132.86 | 122.18 | 133.52 | 127.85 |
| F1-145 | Collins, *var. Claiborne* | 82.85 | 82.52 | 82.69 | 80.66 | 78.31 | 79.49 | 151.31 | 162.87 | 157.09 | 149.12 | 158.67 | 153.89 |
| F1-226 | Collins, *var. Claiborne* | 74.85 | 79.99 | 77.42 | 71.57 | 76.27 | 73.92 | 111.24 | 132.30 | 121.77 | 107.95 | 128.58 | 118.27 |
| F1-259 | Collins, *var. Claiborne* | 63.69 | 64.36 | 64.02 | 69.57 | 72.90 | 71.24 | 84.99 | 76.96 | 80.97 | 90.87 | 85.50 | 88.19 |
| F1-268 | Collins, *var. Claiborne* | 75.37 | 67.23 | 71.30 | 71.34 | 63.88 | 67.61 | 134.02 | 127.26 | 130.64 | 130.00 | 123.91 | 126.96 |
| F1-270 | Collins, *var. Claiborne* | 66.61 | 68.37 | 67.49 | 68.22 | 66.13 | 67.17 | 87.81 | 103.32 | 95.57 | 89.42 | 101.08 | 95.25 |
| F1-298 | Collins, *var. Claiborne* | 65.09 | 90.96 | 78.02 | 69.31 | 87.30 | 78.30 | 133.00 | 159.30 | 146.15 | 137.22 | 155.64 | 146.43 |
| F1-8 | Collins, *var. Clifton* | 71.07 | 83.64 | 77.36 | 64.26 | 76.36 | 70.31 | 130.91 | 134.21 | 132.56 | 124.10 | 126.92 | 125.51 |
| F1-17 | Collins, *var. Clifton* | 78.16 | 86.60 | 82.38 | 70.28 | 79.21 | 74.74 | 112.03 | 121.85 | 116.94 | 104.15 | 114.45 | 109.30 |
| F1-26 | Collins, *var. Clifton* | 73.62 | 71.73 | 72.67 | 76.94 | 71.37 | 74.16 | 101.88 | 103.12 | 102.50 | 105.20 | 102.76 | 103.98 |
| F1-27 | Collins, *var. Clifton* | 66.83 | 58.04 | 62.44 | 68.09 | 59.45 | 63.77 | 103.79 | 94.23 | 99.01 | 105.05 | 95.64 | 100.34 |
| F1-28 | Collins, *var. Clifton* | 74.96 | 86.44 | 80.70 | 68.61 | 78.36 | 73.48 | 112.91 | 136.72 | 124.81 | 106.56 | 128.64 | 117.60 |
| F1-33 | Collins, *var. Clifton* | 74.05 | 80.87 | 77.46 | 74.11 | 77.94 | 76.03 | 102.38 | 114.69 | 108.53 | 102.44 | 111.77 | 107.10 |
| F1-246 | Collins, *var. Clifton* | 79.88 | 81.62 | 80.75 | 78.76 | 75.77 | 77.27 | 107.89 | 117.07 | 112.48 | 106.77 | 111.22 | 109.00 |
| F1-325 | Collins, *var. Clifton* | 81.84 | 83.66 | 82.75 | 75.17 | 75.25 | 75.21 | 146.70 | 132.76 | 139.73 | 140.02 | 124.35 | 132.18 |
| S-2 | Collins, *var. Clifton* | 88.91 | 77.61 | 83.26 | 86.22 | 70.56 | 78.39 | 136.23 | 132.17 | 134.20 | 133.55 | 125.12 | 129.34 |
| S-16 | Collins, *var. Clifton* | 76.80 | 81.95 | 79.37 | 66.22 | 75.83 | 71.02 | 121.02 | 115.73 | 118.38 | 110.43 | 109.62 | 110.03 |
| F1-7 | Collins, *var. Collins* | 78.77 | 97.27 | 88.02 | 69.48 | 91.68 | 80.58 | 118.60 | 137.12 | 127.86 | 109.31 | 131.53 | 120.42 |
| F1-10 | Collins, *var. Collins* | 73.34 | 68.74 | 71.04 | 68.83 | 67.91 | 68.37 | 112.31 | 103.39 | 107.85 | 107.81 | 102.55 | 105.18 |
| F1-25 | Collins, *var. Collins* | 79.82 | 67.76 | 73.79 | 83.03 | 64.37 | 73.70 | 130.26 | 132.91 | 131.59 | 133.47 | 129.52 | 131.50 |
| F1-62 | Collins, *var. Collins* | 68.03 | 88.51 | 78.27 | 62.94 | 90.50 | 76.72 | 120.25 | 148.74 | 134.50 | 115.16 | 150.74 | 132.95 |
| F1-102 | Collins, *var. Collins* | 99.12 | 76.04 | 87.58 | 93.72 | 67.13 | 80.42 | 137.75 | 127.63 | 132.69 | 132.35 | 118.71 | 125.53 |

**Table C.9: Shoulder Angles for Side-Notched Points (continued).**

| Point | Type | Angle Eck | Angle Fcl | Angle EFcmid | Angle Eca | Angle Fca | Angle EFca | Angle Eik | Angle Fil | Angle EFnot mid | Angle Eia | Angle Fja | Angle EFnota |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-123 | Collins, *var. Collins* | 82.96 | 71.06 | 77.01 | 80.76 | 64.70 | 72.73 | 124.88 | 122.15 | 123.51 | 122.67 | 115.80 | 119.23 |
| F1-151 | Collins, *var. Collins* | 71.90 | 56.36 | 64.13 | 74.73 | 57.24 | 65.98 | 143.70 | 123.48 | 133.59 | 146.54 | 124.36 | 135.45 |
| F1-227 | Collins, *var. Collins* | 66.08 | 64.93 | 65.50 | 65.46 | 61.79 | 63.62 | 87.48 | 74.14 | 80.81 | 86.87 | 71.00 | 78.93 |
| F1-277 | Collins, *var. Collins* | 65.36 | 76.99 | 71.17 | 62.43 | 77.25 | 69.84 | 110.19 | 110.29 | 110.24 | 107.26 | 110.55 | 108.91 |
| F1-353 | Collins, *var. Collins* | 70.30 | 79.25 | 74.77 | 71.93 | 76.06 | 73.99 | 128.66 | 126.40 | 127.53 | 130.30 | 123.21 | 126.75 |
| F1-354 | Collins, *var. Collins* | 87.82 | 92.97 | 90.39 | 75.91 | 85.99 | 80.95 | 144.32 | 148.00 | 146.16 | 132.41 | 141.02 | 136.72 |
| F1-368 | Collins, *var. Collins* | 86.35 | 72.46 | 79.41 | 75.98 | 71.51 | 73.75 | 130.57 | 126.18 | 128.37 | 120.19 | 125.23 | 122.71 |
| F1-382 | Collins, *var. Collins* | 64.40 | 71.04 | 67.72 | 61.98 | 68.90 | 65.44 | 98.22 | 89.08 | 93.65 | 95.80 | 86.95 | 91.37 |
| F1-388 | Collins, *var. Collins* | 61.07 | 73.21 | 67.14 | 52.93 | 64.47 | 58.70 | 87.37 | 108.37 | 97.87 | 79.24 | 99.63 | 89.43 |
| F3-31 | Collins, *var. Collins* | 73.75 | 71.17 | 72.46 | 72.03 | 69.28 | 70.66 | 121.56 | 117.52 | 119.54 | 119.83 | 115.64 | 117.74 |
| F5-1 | Collins, *var. Collins* | 75.26 | 78.54 | 76.90 | 76.10 | 77.51 | 76.80 | 102.48 | 98.91 | 100.70 | 103.32 | 97.88 | 100.60 |
| S-4 | Collins, *var. Collins* | 73.13 | 71.10 | 72.12 | 74.41 | 70.38 | 72.40 | 119.10 | 111.63 | 115.36 | 120.38 | 110.91 | 115.65 |
| S-9 | Collins, *var. Collins* | 80.48 | 81.38 | 80.93 | 73.96 | 76.51 | 75.23 | 108.52 | 122.45 | 115.49 | 101.99 | 117.58 | 109.79 |
| S-13 | Collins, *var. Collins* | 74.61 | 79.35 | 76.98 | 63.46 | 72.66 | 68.06 | 122.02 | 116.69 | 119.36 | 110.87 | 110.00 | 110.43 |
| 614-1 | Collins, *var. Serrated* | 91.70 | 74.34 | 83.02 | 92.17 | 71.52 | 81.84 | 146.94 | 140.05 | 143.50 | 147.41 | 137.23 | 142.32 |
| F1-2 | Collins, *var. Serrated* | 80.45 | 68.61 | 74.53 | 80.97 | 69.17 | 75.07 | 136.25 | 133.25 | 134.75 | 136.78 | 133.81 | 135.30 |
| F1-3 | Collins, *var. Serrated* | 84.07 | 66.97 | 75.52 | 85.28 | 67.79 | 76.53 | 137.50 | 115.75 | 126.62 | 138.71 | 116.57 | 127.64 |
| F1-5 | Collins, *var. Serrated* | 75.76 | 83.97 | 79.87 | 72.22 | 82.07 | 77.15 | 119.64 | 122.99 | 121.31 | 116.10 | 121.09 | 118.59 |
| F1-9 | Collins, *var. Serrated* | 70.23 | 76.08 | 73.16 | 76.02 | 78.27 | 77.14 | 112.02 | 146.79 | 129.40 | 117.81 | 148.98 | 133.39 |
| F1-11 | Collins, *var. Serrated* | 76.25 | 62.43 | 69.34 | 73.21 | 63.54 | 68.38 | 98.26 | 83.91 | 91.09 | 95.23 | 85.03 | 90.13 |
| F1-31 | Collins, *var. Serrated* | 80.88 | 74.63 | 77.75 | 83.17 | 74.80 | 78.99 | 125.48 | 119.10 | 122.29 | 127.78 | 119.27 | 123.53 |
| F1-32 | Collins, *var. Serrated* | 75.14 | 85.05 | 80.09 | 75.03 | 87.55 | 81.29 | 104.01 | 114.27 | 109.14 | 103.90 | 116.77 | 110.34 |
| F1-40 | Collins, *var. Serrated* | 78.93 | 90.92 | 84.93 | 78.38 | 82.14 | 80.26 | 107.25 | 124.11 | 115.68 | 106.70 | 115.33 | 111.01 |
| F1-41 | Collins, *var. Serrated* | 75.21 | 96.18 | 85.69 | 75.65 | 90.70 | 83.18 | 105.77 | 137.27 | 121.52 | 106.21 | 131.80 | 119.00 |
| F1-43 | Collins, *var. Serrated* | 85.18 | 81.54 | 83.36 | 84.15 | 81.94 | 83.05 | 121.91 | 114.69 | 118.30 | 120.89 | 115.09 | 117.99 |
| F1-46 | Collins, *var. Serrated* | 74.79 | 89.60 | 82.19 | 76.15 | 90.91 | 83.53 | 110.31 | 130.03 | 120.17 | 111.67 | 131.34 | 121.51 |
| F1-48 | Collins, *var. Serrated* | 77.90 | 80.42 | 79.16 | 81.14 | 82.52 | 81.83 | 137.41 | 130.77 | 134.09 | 140.64 | 132.87 | 136.76 |
| F1-53 | Collins, *var. Serrated* | 88.95 | 87.74 | 88.34 | 85.20 | 81.30 | 83.25 | 130.64 | 127.35 | 129.00 | 126.89 | 120.92 | 123.90 |
| F1-54 | Collins, *var. Serrated* | 80.47 | 76.48 | 78.48 | 78.93 | 75.89 | 77.41 | 117.92 | 104.79 | 111.35 | 116.38 | 104.20 | 110.29 |
| F1-56 | Collins, *var. Serrated* | 84.60 | 84.88 | 84.74 | 81.98 | 81.35 | 81.66 | 136.71 | 136.60 | 136.66 | 134.09 | 133.07 | 133.58 |
| F1-57 | Collins, *var. Serrated* | 79.72 | 83.42 | 81.57 | 76.53 | 79.50 | 78.01 | 141.63 | 127.25 | 134.44 | 138.44 | 123.32 | 130.88 |
| F1-58 | Collins, *var. Serrated* | 77.63 | 88.60 | 83.12 | 79.02 | 88.31 | 83.67 | 129.32 | 133.77 | 131.55 | 130.71 | 133.48 | 132.09 |
| F1-59 | Collins, *var. Serrated* | 86.55 | 85.44 | 86.00 | 85.61 | 80.87 | 83.24 | 128.00 | 125.65 | 126.83 | 127.06 | 121.08 | 124.07 |
| F1-61 | Collins, *var. Serrated* | 72.10 | 69.36 | 70.73 | 75.33 | 64.57 | 69.95 | 128.42 | 129.32 | 128.87 | 131.64 | 124.53 | 128.08 |
| F1-64 | Collins, *var. Serrated* | 69.42 | 85.01 | 77.21 | 67.56 | 83.47 | 75.52 | 121.76 | 132.64 | 127.20 | 119.91 | 131.10 | 125.51 |

**Table C.9: Shoulder Angles for Side-Notched Points (continued).**

| Point | Type | Angle Eck | Angle Fcl | Angle EFcmid | Angle Eca | Angle Fca | Angle EFca | Angle Eik | Angle Fil | Angle EFnot mid | Angle Eia | Angle Fja | Angle EFnota |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1-65 | Collins, *var. Serrated* | 72.82 | 66.03 | 69.42 | 77.60 | 71.13 | 74.37 | 93.17 | 89.40 | 91.29 | 97.95 | 94.50 | 96.23 |
| F1-66 | Collins, *var. Serrated* | 80.90 | 70.73 | 75.82 | 79.35 | 72.68 | 76.01 | 126.47 | 125.62 | 126.04 | 124.92 | 127.56 | 126.24 |
| F1-67 | Collins, *var. Serrated* | 82.60 | 96.62 | 89.61 | 77.37 | 95.68 | 86.52 | 155.49 | 151.69 | 153.59 | 150.26 | 150.74 | 150.50 |
| F1-69 | Collins, *var. Serrated* | 71.65 | 71.67 | 71.66 | 74.09 | 75.14 | 74.62 | 108.83 | 116.02 | 112.42 | 111.28 | 119.48 | 115.38 |
| F1-70 | Collins, *var. Serrated* | 82.49 | 79.26 | 80.88 | 78.30 | 73.70 | 76.00 | 131.27 | 121.31 | 126.29 | 127.08 | 115.75 | 121.41 |
| F1-80 | Collins, *var. Serrated* | 88.45 | 80.26 | 84.36 | 88.09 | 80.98 | 84.53 | 146.79 | 138.52 | 142.65 | 146.42 | 139.24 | 142.83 |
| F1-125 | Collins, *var. Serrated* | 76.24 | 92.72 | 84.48 | 66.76 | 75.09 | 70.93 | 127.84 | 161.08 | 144.46 | 118.36 | 143.45 | 130.91 |
| F1-130 | Collins, *var. Serrated* | 67.63 | 94.03 | 80.83 | 64.06 | 80.70 | 72.38 | 108.70 | 139.12 | 123.91 | 105.14 | 125.79 | 115.46 |
| F1-169 | Collins, *var. Serrated* | 83.01 | 81.31 | 82.16 | 81.90 | 79.14 | 80.52 | 148.67 | 110.77 | 129.72 | 147.57 | 108.59 | 128.08 |
| F1-214 | Collins, *var. Serrated* | 57.04 | 61.62 | 59.33 | 55.63 | 61.13 | 58.38 | 76.31 | 75.51 | 75.91 | 74.90 | 75.02 | 74.96 |
| F1-223 | Collins, *var. Serrated* | 84.41 | 111.46 | 97.94 | 71.29 | 98.96 | 85.13 | 152.41 | 157.44 | 154.92 | 139.29 | 144.93 | 142.11 |
| F1-241 | Collins, *var. Serrated* | 80.90 | 70.26 | 75.58 | 76.71 | 66.22 | 71.47 | 131.18 | 139.15 | 135.17 | 127.00 | 135.10 | 131.05 |
| F1-248 | Collins, *var. Serrated* | 56.51 | 47.62 | 52.07 | 55.60 | 45.38 | 50.49 | 86.55 | 75.32 | 80.94 | 85.64 | 73.07 | 79.36 |
| F1-306 | Collins, *var. Serrated* | 67.70 | 72.46 | 70.08 | 65.64 | 66.52 | 66.08 | 121.90 | 123.47 | 122.69 | 119.84 | 117.54 | 118.69 |
| F1-345 | Collins, *var. Serrated* | 91.18 | 82.74 | 86.96 | 81.55 | 82.57 | 82.06 | 154.77 | 121.32 | 138.05 | 145.14 | 121.16 | 133.15 |
| S-3 | Collins, *var. Serrated* | 88.08 | 96.92 | 92.50 | 78.67 | 88.60 | 83.63 | 162.25 | 169.35 | 165.80 | 152.85 | 161.03 | 156.94 |
| S-5 | Collins, *var. Serrated* | 79.71 | 72.51 | 76.11 | 78.37 | 75.21 | 76.79 | 119.36 | 110.41 | 114.89 | 118.01 | 113.11 | 115.56 |
| S-6 | Collins, *var. Serrated* | 73.37 | 68.88 | 71.12 | 77.81 | 71.41 | 74.61 | 133.82 | 118.10 | 125.96 | 138.26 | 120.63 | 129.45 |
| S-8 | Collins, *var. Serrated* | 76.99 | 77.54 | 77.27 | 75.50 | 76.88 | 76.19 | 124.21 | 105.47 | 114.84 | 122.71 | 104.80 | 113.76 |
| S-10 | Collins, *var. Serrated* | 79.15 | 75.58 | 77.36 | 78.23 | 76.24 | 77.24 | 123.77 | 123.23 | 123.50 | 122.86 | 123.89 | 123.37 |
| S-11 | Collins, *var. Serrated* | 73.09 | 86.63 | 79.86 | 72.49 | 85.59 | 79.04 | 138.82 | 133.77 | 136.30 | 138.23 | 132.72 | 135.47 |
| S-15 | Collins, *var. Serrated* | 85.87 | 78.54 | 82.21 | 83.85 | 75.12 | 79.49 | 138.56 | 124.16 | 131.36 | 136.54 | 120.74 | 128.64 |
| 1625-3 | Collins, *var. Unspecified* | 73.91 | 93.61 | 83.76 | 68.31 | 77.14 | 72.73 | 131.28 | 177.24 | 154.26 | 125.68 | 166.29 | 145.99 |
| 469a-1 | Collins, *var. Unspecified* | 102.79 | 77.38 | 90.09 | 86.16 | 73.13 | 79.65 | 157.22 | 151.85 | 154.53 | 140.59 | 147.60 | 144.10 |
| F1-87 | Collins, *var. Unspecified* | 87.31 | 95.20 | 91.26 | 81.82 | 87.53 | 84.67 | 168.80 | 163.91 | 166.35 | 163.30 | 156.24 | 159.77 |
| F1-118 | Collins, *var. Unspecified* | 95.37 | 89.30 | 92.33 | 83.45 | 75.95 | 79.70 | 129.26 | 132.56 | 130.91 | 117.34 | 119.21 | 118.27 |
| F1-175 | Collins, *var. Unspecified* | 87.37 | 77.09 | 82.23 | 81.53 | 74.57 | 78.05 | 129.91 | 117.23 | 123.57 | 124.07 | 114.71 | 119.39 |
| F1-185 | Collins, *var. Unspecified* | 66.56 | 74.29 | 70.42 | 71.66 | 77.30 | 74.48 | 107.95 | 118.96 | 113.46 | 113.06 | 121.98 | 117.52 |
| F1-415 | Collins, *var. Unspecified* | 65.60 | 61.24 | 63.42 | 62.44 | 61.36 | 61.90 | 80.65 | 78.64 | 79.64 | 77.49 | 78.76 | 78.13 |
| F1-19 | Morris | 89.02 | 81.93 | 85.47 | 83.63 | 75.70 | 79.67 | 122.20 | 105.18 | 113.69 | 116.81 | 98.95 | 107.88 |
| F1-68 | Morris | 73.82 | 77.36 | 75.59 | 74.81 | 74.73 | 74.77 | 110.74 | 119.45 | 115.10 | 111.73 | 116.83 | 114.28 |
| F1-222 | Morris | 66.16 | 61.37 | 63.77 | 63.31 | 62.12 | 62.72 | 147.06 | 149.47 | 148.27 | 144.21 | 150.22 | 147.21 |
| F1-274 | Morris | 63.28 | 80.33 | 71.81 | 65.79 | 82.58 | 74.19 | 98.55 | 117.11 | 107.83 | 101.06 | 119.36 | 110.21 |
| F1-275 | Morris | 86.71 | 95.28 | 90.99 | 79.60 | 84.51 | 82.05 | 158.96 | 168.24 | 163.60 | 151.85 | 157.47 | 154.66 |
| S-7 | Morris | 83.29 | 81.36 | 82.33 | 77.01 | 75.64 | 76.32 | 135.01 | 143.60 | 139.31 | 128.73 | 137.88 | 133.30 |

# Appendix D: Pictures of Points

This section shows pictures of the points studied in this collection. The points were photographed at a height of 17 inches with 35mm zoom and a large image size setting. These pictures were taken before the points were labeled and were organized by context, fitting as many points from a given context on a slide as possible, for the most part. The following figures have the same scale and lighting so that they may be easily comparable. The figure captions list the point numbers from left to right.

## RLA Points


**Figure D.1: Row 1: 1279-1, 625-1, 846-1, 1515-1; Row 2: 941-1, 1658-1, 848-1**


**Figure D.2: Row 1: 469a-1, 848-2, 1014-1, 721-2, 1801-1, 1228-1, 436-1; Row 2: 846-2, 721-3, 1625-3, 722-1, 1469-1, 721-4, 27-2, 868-1; Row 3: 848-3, 249-1, 681-1, 845-1, 4-1, 1602-1**


**Figure D.3: 633-1, 383-1, 1606-1**


**Figure D.4: 644-1, 1621-1, 304-2**


**Figure D.5: Row 1: 1386-1, 691-1, 644-2, 941-2, 869-2; Row 2: 614-1, 1623-1, 531-1, 436-2, 2001**


Figure D.6: Row 1: 2745-1, 2817-1, 3007-1, 2582-1, 2901-1, 2968-1, 2529-1, 2542-1; Row 2: 2583-1, 2901-1, 2713-1, 2595-3, 3106-1, 2577-1, 2504-1, 2593-1; Row 3: 2582-2, 2537-1, 2519-1, 2617-3, 2901-2, 2617-1, 2593-2, 2578-1, 2542-2


Figure D.7: Row 1: 21-1, 1279-1, 939-1, 1609-1; Row 2: 304-1, 417-1, 721-1, 1628-1


**Figure D.8: Row 1: 1625-1, 1364-1, 869-1, 1625-2, 31-1; Row 2: 1279-2, 7-1, 618-1**


**Figure D.9: Row 1: 1188-1, 1674-1; Row 2: 1517-1, 2-1, 1189-1**


**Figure D.10: Row 1: 104-1, 3-1, 1186-1, 1331-1; Row 2: 618-2, 27-3, 330-1, 448-1, 1994**

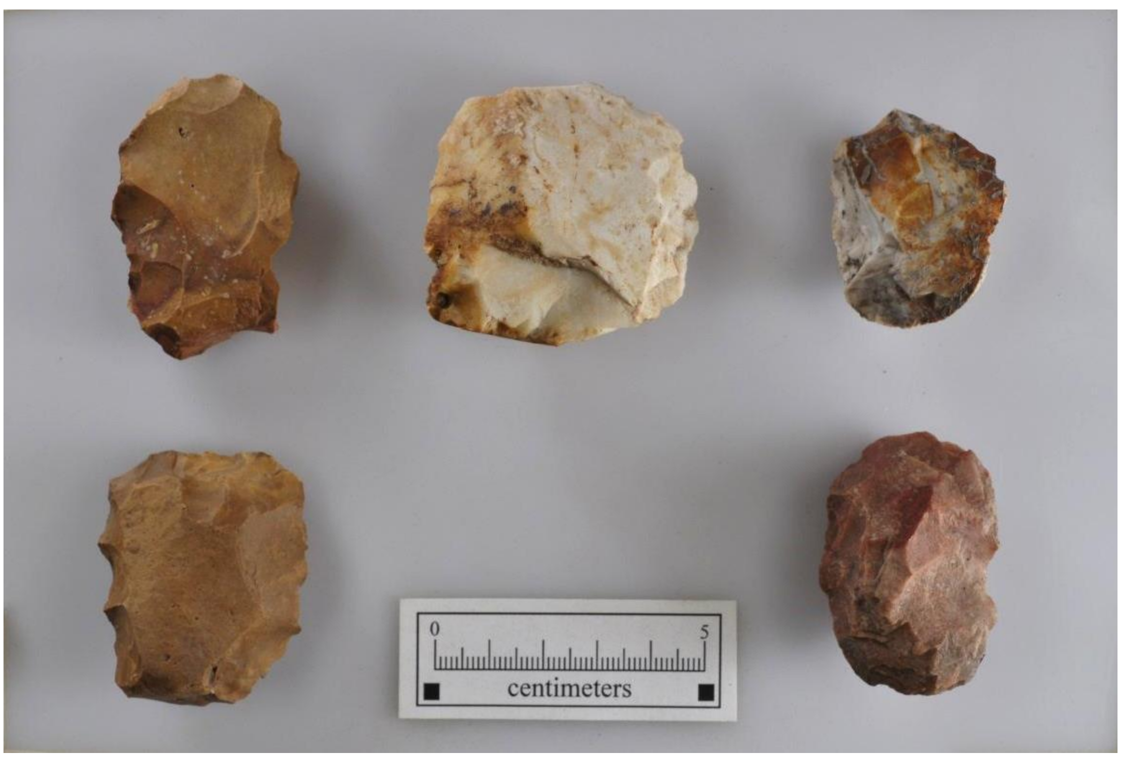



**Figure D.11: Row 1: 91-1, 53-1, 1098-1; Row 2: 846-1, 5-1**


**Figure D.12: Row 1: 329-1, 2-2; Row 2: 1644-1, 668-1**


**Figure D.13: 2608-1, 2810-1, 2583-2, 2583-3, 2630-1; Row 2: 2630-2, 2595-1, 2617-2, 2595-2**

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**Figure D.14: Row 1: F1-1, F1-2, F1-3, F1-4, F1-5, F1-6, F1-7, F1-8; Row 2: F1-9, F1-10, F1-11, F1-12, F1-13, F1-14, F1-15; Row 3:F1-16, F1-17, F1-18, F1-19, F1-20, F1-21, F1-22, F1-23; Row 4: F1-24, F1-25, F1-26, F1-27, F1-28**


**Figure D.15: Row 1: F1-29, F1-30, F1-31, F1-32, F1-33, F1-34, F1-35, F1-36, F1-37, F1-38; Row 2: F1-39, F1-40, F1-41, F1-42, F1-43, F1-44, F1-45, F1-47, F1-48; Row 3: F1-49, F1-50, F1-51, F1-52, F1-53, F1-54, F1-55, F1-56**


**Figure D.16 : Row 1: F1-57, F1-58, F1-59, F1-60, F1-61, F1-64; Row 2: F1-65, F1-66, F1-67, F1-68, F1-69, F1-70, F1-71**


**Figure D.17: F1-72, F1-73, F1-74, F1-75, F1-76, F1-77**


**Figure D.18: F1-78, F1-79, F1-80, F1-81, F1-82**


**Figure D.19: Row 1: F1-83, F1-84, F1-85, F1-86, F1-87, F1-88, F1-89, F1-90; Row 2: F1-91, F1-92, F1-93, F1-94, F1-95, F1-96, F1-97, F1-98; Row 3: F1-99, F1-100, F1-101, F1-102, F1-103**


**Figure D.20: Row 1: F1-104, F1-105, F1-106, F1-107, F1-108, F1-109, F1-110, F1-111; Row 2: F1-112, F1-113, F1-114, F1-115, F1-116, F1-117, F1-118, F1-119, F1-120; Row 3: F1-121, F1-122, F1-123, F1-124, F1-125, F1-126**


**Figure D.21: Row 1: F1-127, F1-128, F1-129, F1-130, F1-131, F1-132, F1-133, F1-134, F1-135; Row 2: F1-136, F1-137, F1-138, F1-139, F1-140, F1-141, F1-142, F1-143; Row 3: F1-144, F1-145, F1-146, F1-147, F1-148, F1-149**

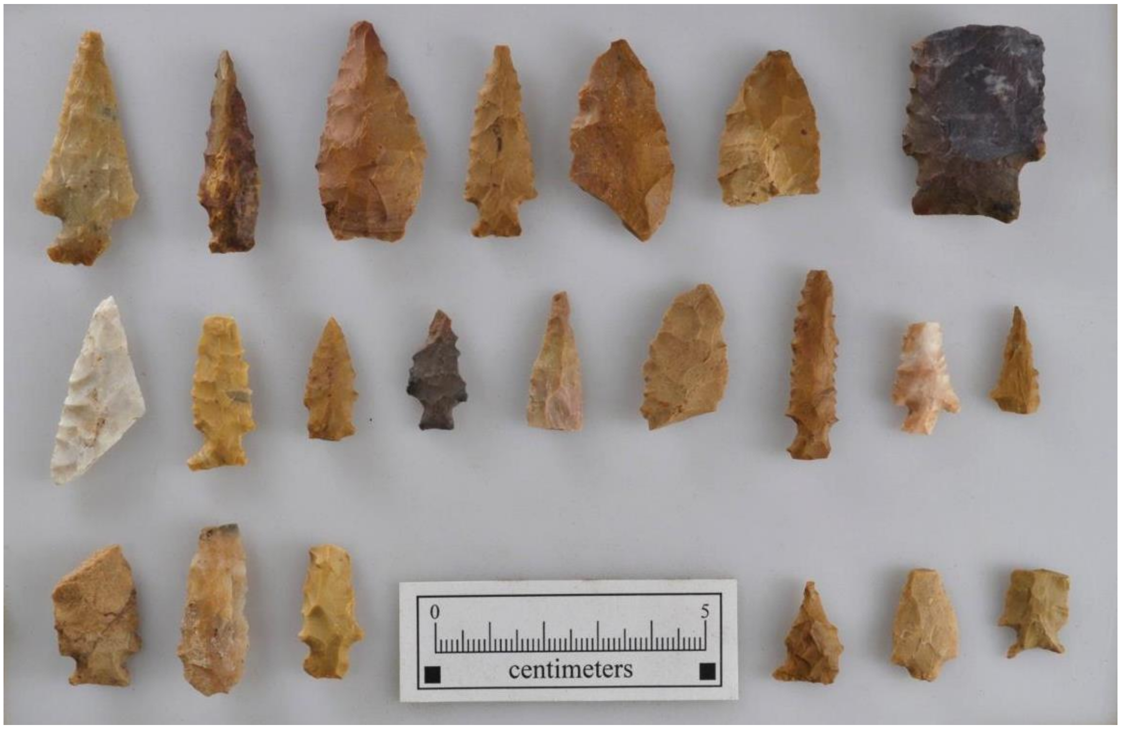


**Figure D.22: Row 1: F1-150, F1-151, F1-152, F1-153, F1-154, F1-155, F1-156; Row 2: F1-157, F1-158, F1-159, F1-160, F1-161, F1-162, F1-163, F1-164, F1-165; Row 3: F1-166, F1-167, F1-168, F1-169, F1-170, F1-171**


**Figure D.23: Row 1: F1-172, F1-173, F1-174, F1-175, F1-176, F1-177, F1-178; Row 2: F1-179, F1-180, F1-181, F1-182, F1-183, F1-184, F1-185, F1-186; Row 3: F1-187, F1-188, F1-189, F1-190, F1-191, F1-192**


**Figure D.24: Row 1: F1-193, F1-194, F1-195, F1-196, F1-197, F1-198, F1-199, F1-200, F1-201; Row 2: F1-202, F1-203, F1-204, F1-05, F1-206, F1-207, F1-208, F1-209, F1-210; Row 3: F1-211, F1-212, F1-213, F1-214, F1-215, F1-216, F1-217, F1-218; Row 4: F1-219, F1-220, F1-221, F1-222, F1-223, F1-224**


**Figure D.25: Row 1: F1-225, F1-226, F1-227, F1-228, F1-229, F1-230, F1-231, F1-232, F1-233; Row 2: F1-234, F1-235, F1-236, F1-37, F1-238, F1-239, F1-240, F1-241, F1-242; Row 3: F1-243, F1-244, F1-245, F1-246, F1-247, F1-248, F1-249, F1-250, F1-251, F1-252; Row 4: F1-253, F1-254, F1-255, F1-256, F1-257, F1-258**


**Figure D.26: Row 1: F1-259, F1-260, F1-261, F1-262, F1-263, F1-264, F1-265, F1-266, F1-267, F1-268; Row 2: F1-269, F1-270, F1-271, F1-272, F1-273, F1-274, F1-275, F1-276, F1-277, F1-278; Row 3: F1-279, F1-280, F1-281, F1-282, F1-283, F1-284, F1-285, F1-286, F1-287; Row 4: F1-288, F1-289, F1-290, F1-291, F1-292, F1-293**


**Figure D.27: Row 1: F1-294, F1-295, F1-296, F1-297, F1-298, F1-299, F1-301, F1-302; Row 2: F1-303, F1-304, F1-305, F1-306, F1-307, F1-308, F1-309, F1-310, F1-311; Row 3: F1-312, F1-313, F1-314, F1-315, F1-316, F1-317, F1-318, F1-319, F1-320, F1-321; Row 4: F1-322, F1-323, F1-324, F1-325, F1-326, F1-327**


**Figure D.28: Row 1: F1-328, F1-3,29, F1-330, F1-331, F1-332, F1-333, F1-334, F1-335, F1-336, F1-337; Row 2: F1-338, F1-339, F1-340, F1-341, F1-342, F1-343, F1-344, F1-345, F1-346, F1-347; Row 3: F1-348, F1-349, F1-350, F1-351, F1-352, F1-353, F1-354, F1-355, F1-356, F1-357; Row 4: F1-358, F1-359, F1-360, F1-361, F1-362, F1-363**


**Figure D.29: Row 1: F1-364, F1-365, F1-366, F1-367, F1-368, F1-369, F1-370, F1-372, F1-373, F1-374; Row 2: F1-375, F1-376, F1-377, F1-378, F1-379, F1-371, F1-380, F1-381, F1-382, F1-383; Row 3: F1-384, F1-385, F1-386, F1-387, F1-388, F1-389, F1-390, F1-391, F1-392; Row 4: F1-393, F1-394, F1-395, F1-396, F1-397, F1-398**


**Figure D.30: Row 1: F1-399, F1-400, F1-401, F1-402, F1-403, F1-404, F1-405, F1-406, F1-407, F1-408; Row 2: F1-409, F1-410, F1-411, F1-412, F1-413, F1-414, F1-415, F1-416, F1-417, F1-418; Row 3: F1-419, F1-420, F1-421, F1-422, F1-423, F1-424, F1-425**


**Figure D.31: F2-1, F2-2, F2-3, F2-4, F2-5**


**Figure D.32: F2-6, F2-7, F2-8, F2-9, F2-10**


**Figure D.33: F2-11, F2-12, F2-13**


**Figure D.34: F2-14, F2-15, F2-16, F2-17**


**Figure D.35: F2-18, F2-19, F2-20, F2-21, F2-22**


**Figure D.36: F2-23, F2-24, F2-25, F2-26, F2-27**


**Figure D.37: Row 1: F2-28, F2-29, F2-30, F2-31; Row 2: F2-32, F2-33, F2-34, F2-35**


**Figure D.38: Row 1: F2-36, F2-37, F2-38, F2-39; Row 2: F2-40, F2-41, F2-42, F2-43**


**Figure D.39: Row 1: F2-44, F2-45, F2-46, F2-47; Row 2: F2-48, F2-49, F2-50, F2-51**


**Figure D.40: Row 1: F2-52, F2-53, F2-54, F2-55, F2-56; Row 2: F2-57, F2-58, F2-59, F2-60, F2-61**


**Figure D.41: Row 1: F2-62, F2-63, F2-64, F2-65, F2-66; Row 2: F2067, F2-68, F2-69, F2-70, F2-71, F2-72, F2-73**


**Figure D.42: Row 1: F2-74, F2-75, F2-76, F2-77, F2-78; Row 2: F2-79, F2-80, F2-81, F2-82, F2-83**


**Figure D.43: Row 1: F2-84, F2-85, F2-86, F2-87, F2-88; Row 2: F2-89, F2-90, F2-91, F2-92, F2-93**


**Figure D.44: Row 1: F2-94, F2-95, F2-96, F2-97, F2-98; Row 2: F2-99, F2-100, F2-101, F2-102**


**Figure D.45: F3-1, F3-2**


**Figure D.46: F3-3, F3-4, F3-5**


**Figure D.47: Row 1: F3-6, F3-7, F3-8, F3-9; Row 2: F3-10, F3-11, F3-12, F3-13; Row 3: F3-14, F3-15, F3-16**


Figure D.48: Row 1: F3-17, F3-18, F3-19, F3-20, F3-21; Row 2: F3-22, F3-23, F3-24, F3-25, F3-26


Figure D.49: Row 1: F3-27, F3-28, F3-29, F3-30, F3-31; Row 2: F3-32, F3-33, F3-34, F3-35, F3-36


**Figure D.50: Row 1: F3-37, F3-38, F3-39, F3-40, F3-41; Row 2: F3-42, F3-43, F3-44, F3-45, F3-46**


**Figure D.51: Row 1: F3-47, F3-48, F3-49, F3-50, F3-51; Row 2: F3-52, F3-53, F3-54, F3-55, F3-56**


**Figure D.52: Row 1: F3-57, F3-58, F3-59, F3-60, F3-61; Row 2: F3-62, F3-63, F3-64, F3-65, F3-66**

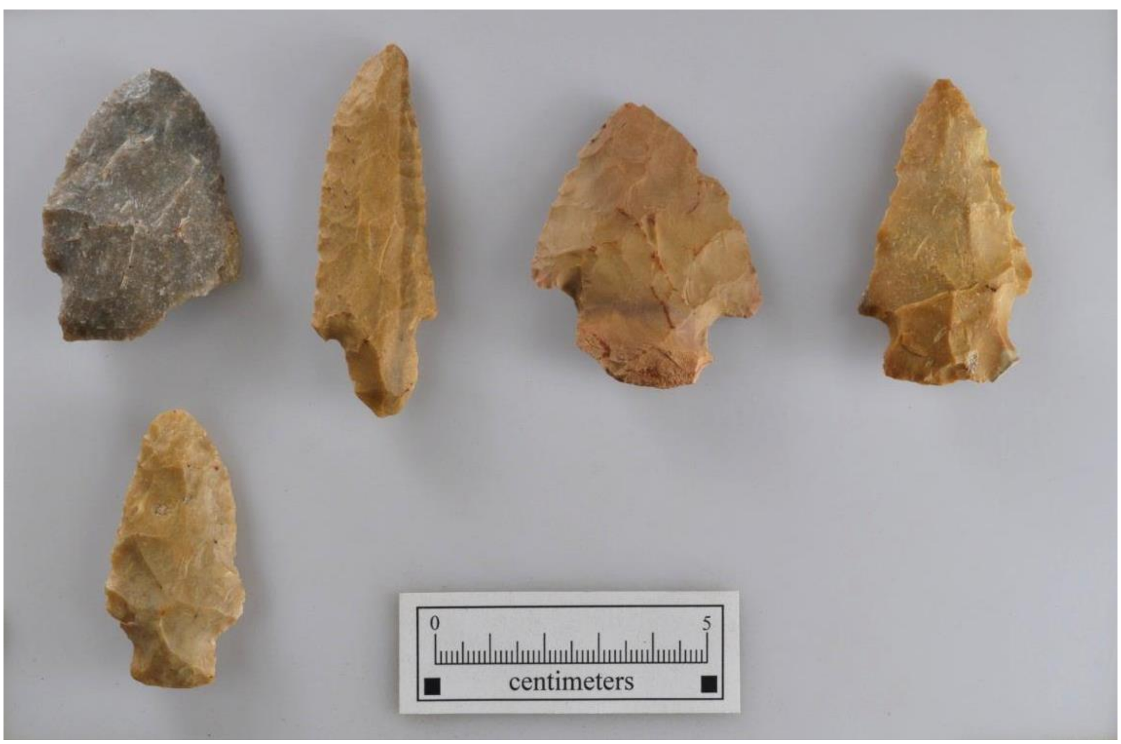


**Figure D.53: Row 1: F4-1, F4-2, F4-3, F4-4; Row 2: F4-5**


**Figure D.54: F5-1**


**Figure D.55: F5-2, F5-3, F5-4, F5-5**


**Figure D.56: F5-6, F5-7, F5-8, F5-9, F5-10**


**Figure D.57: Row 1: F5-11, F5-12, F5-13, F5-14; Row 2: F5-15, F5-16, F5-17, F5-18**


**Figure D.58: Row 1: F5-19, F5-20, F5-21, F5-22; Row 2: F5-23, F5-24, F5-25, F5-26**


**Figure D.59: Row 1: F5-27, F5-27, F5-28, F5-29, F5-30, F5-31; Row 2: F5-32, F5-33, F5-34, F5-35**


**Figure D.60: F6-1, F6-2, F6-3**


**Figure D.61: F6-4**


**Figure D.62: F6-5**


**Figure D.63: PL7-1**


**Figure D.64: Row 1: PL7-2, PL7-3, PL7-4, PL7-5, PL7-6; Row 2: PL7-7**


**Figure D.65: Row 1: PL8-1, PL8-2, PL8-3, PL8-4, PL8-5; Row 2: PL8-6, PL8-7, PL8-8, PL8-9**


**Figure D.66: Row 1: PL8-10, PL8-11, PL8-12, PL8-13, PL8-14, PL8-15; Row 2: PL8-16, PL8-17, PL8-18, PL8-19, PL8-20**


**Figure D.67: PL8-21, PL8-22, PL8-23, PL8-24, PL8-25**


**Figure D.68: Row 1: PL8-26, PL8-27, PL8-28, PL8-29; Row 2: PL8-30, PL8-31, PL8-32, PL8-33, PL8-34, PL8-35**


**Figure D.69: Row 1: PL8-36, PL8-37, PL8-38, PL8-39, PL8-40; Row 2: PL8-41, PL8-42, PL8-43, PL8-44, PL8-45**


**Figure D.70: Row 1: PL8-46, PL8-47, PL8-48, PL8-49, PL8-50; Row 2: PL8-51, PL8-52, PL8-53, PL8-54**


**Figure D.71: Row 1: PL8-55, PL8-56, PL8-57, PL8-58, PL8-59, PL8-60; Row 2: PL8-61, PL8-62, PL8-63, PL8-64, PL8-65, PL8-66**


**Figure D.72: Row 1: PL8-67, PL8-68, PL8-69, PL8-70, PL8-71, PL8-72; Row 2: PL8-73, PL8-74, PL8-75, PL8-76, PL8-77, PL8-78**


**Figure D.73: Row 1: PL8-79, PL8-80, PL8-81, PL8-82; Row 2: PL8-83, PL8-84, PL8-85**


**Figure D.74: Row 1: PL8-86, PL8-87, PL8-88, PL8-89, PL8-90; Row 2: PL8-91, PL8-92, PL8-93, PL8-94, PL8-95; Row 3: PL8-96, PL8-97, PL8-98, PL8-99**


**Figure D.75: PL9-1, PL9-2, PL9-3, PL9-4, PL9-5**


**Figure D.76: PL9-6, PL9-7, PL9-8, PL9-9, PL9-10**


**Figure D.77: Row 1: PL9-11, PL9-12, PL9-13, PL9-14, PL9-15; Row 2: PL9-16, PL9-17, PL9-18, PL9-19**


**Figure D.78: PL10-1**


**Figure D.79: PL10-2, PL10-3**

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**Figure D.80**: **S-1, S-2, S-3, S-4, S-5, S-6, S-7, S-8, S-9, S-10, S-11, S-12, S-13, S-14, S-15, S-16**


**Figure D.81: S-17**

# References


Anderson, David G. and Glen T. Hanson

1988 Early Archaic Settlement in the Southeastern United States: A Case Study from the Savannah River Valley. *American Antiquity* 53(2):262-286.

Anderson, David G., Lisa D. O'Steen, and Kenneth E. Sassaman

1996 Environmental and Chronological Considerations. In *The Paleoindian and Early Archaic Southeast*, edited by David G. Anderson and Kenneth E. Sassaman, pp.3-15. The University of Alabama Press, Tuscaloosa.

Andrefsky, William

1998 *Lithics: Macroscopic Approaches to Analysis.* 2nd ed. Cambridge University Press, Cambridge.

Bell, Robert E.

1958 *Guide to the Identification of Certain American Indian Projectile Points.* Special Bulletin No.1 Oklahoma Anthropological Society, Moore, Oklahoma.

Bicker, Alvin R. Jr.

1969 *Geologic Map of Mississippi*. Mississippi Geological Survey, Jackson, Mississippi.

Bourdieu, Pierre

1977 *Outline of a Theory of Practice.* Cambridge University Press, Cambridge.

Buchanan, Briggs

2005 Cultural Transmission and Stone Tools: A Study of Early Paleoindian Technology in North America. Ph.D. dissertation, University of NewMexico, Albuquerque, University Microfilms, Ann Arbor.

2006 An Analysis of Folsom Projectile Point Resharpening Using Quantitative Comparisons of Form and Allometry. *Journal of Archaeological Science* 33(185-199).

Brain, Jeffery P.

1971 *The Lower Mississippi Valley in Prehistory.* Report submitted to the National Park Service, Southeast Region and the Arkansas Archaeological Survey.

Bradley, Bruce and Dennis Stanford

2006 The Solutrean-Clovis Connection: Reply to Straus, Meltzer, and Goebel. *World Archaeology* 38(4):704-714.

Brookes, Samuel O., Robert E. Reams, and David R. James.

2011 Some Ruminations on Pine Hills Pointy Rocks. Paper presented at the Annual Meeting of the Mississippi Archaeological Association, Greenville, Mississippi.

Brew, John O.

1946 The Use and Abuse of Taxonomy. In *The Archaeology of Alkali Ridge, Southern Utah*, pp. 44-66. Papers of the Peabody Museum of Archaeology and Ethnology Vol 21. Harvard University Press, Cambridge.

Davis, John C.

1973 *Statistics and Data Analysis in Geology.* Wiley & Sons, Inc., Chichester, New York.

DeMasi, Natalie
2011 Refining Point Types in Southwest Mississippi. Paper presented at the Annual Meeting of the Southeastern Archaeology Conference, Jacksonville, Florida.
Dietler, Michael and Ingrid Herbich
1998 *Habitus*, Techniques, Style: An Integrated Approach to the Social Understanding of Material Culture and Boundaries. In *The Archaeology of Social Boundaries*, edited Miriam T. Stark, pp.232-263. Smithsonian Institution Press: Washington DC.
Dockery, David T., III
1995 *Rocks and Fossils Collected from Mississippi Gravel*. Mississippi Geology 16(2):25-42.
Dockery, David T., III and David E. Thompson
2011 *The Geology of Mississippi*. Kickapoo Press, Clinton, Mississippi.
Dunnell, Robert C.
1971 Sobloff and Smith's "The Importance of Both Analytic and Taxonomic Classification in the Type-Variety System." *American Antiquity* 36(1):115-118.
1978 Style and Function: A Fundamental Dichotomy. *American Antiquity* 43(2):192-202.
Flenniken, J. Jeffery and Anan W. Raymond
1986 Morphological Projectile Point Typology: Replication Experimentation and Technological Analysis. *American Antiquity* 51(3):603-614.
Fritz, Gayle J.
1999 Gender and the Early Cultivation of Gourds in Eastern North America. *American Antiquity* 64(3):417-429.
Ford, James A.
1954 On the Concept of Types. *American Anthropologists* 56(1):42-54.
Gosselain, Oliver P.
1998 Social and Technical Identity in a Clay Crystal Ball. In *The Archaeology of Social Boundaries*, edited Miriam T. Stark, pp.78-106. Smithsonian Institution Press: Washington DC.
Gregg, Michael L. and Richard J. Grybush
1976 Thermally Altered Siliceous Stone from Prehistoric Contexts: Intentional versus Unintentional Alteration. *American Antiquity* 41(2):189-192.
Hegmon, Michelle
1998 Technology, Style, and Social Practices: Archaeological Approaches. In *The Archaeology of Social Boundaries*, edited Miriam T. Stark, pp.264-280. Smithsonian Institution Press: Washington DC.
Hodder, Ian
1990 Style as Historical Quality. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp.44-51. Cambridge University Press, Cambridge.
Jefferies, Richard W.
1996 The Emergence of Long-Distance Exchange Networks in the Southeastern United States. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E.

Sassaman and David G. Anderson. Florida Museum of Natural History: Ripley P. Bullen Series.
Johnson, Jay K. and Samuel O. Brookes
1989 Benton Points, Turkey Tails, and Cache Blades: Middle Archaic Exchange in the Midsouth. *Southeastern Archaeology* 8(2):134-145.
Johnson, Jay K, Abigayle Robbins, and John T. Sparks
1983 *Excavations at the Mud Island Creek Archaeological Complex and the Gordon Mounds Site, Jefferson County, Mississippi.* Archaeological Papers No. 4. Center for Archaeological Research, University of Mississippi, Starkville, Mississippi.
Kassabaum, Megan C.
2007 *Looking Beyond the Obvious: Identifying Patterns in Coles Creek Mortuary Data*. Unpublished Fourth Semester Paper, Department of Anthropology, University of North Carolina, Chapel Hill.
Kidder, Tristram R.
2004 Prehistory of the Lower Mississippi Valley After 800BC. In *Southeast*, edited by Raymond D. Fogelson, pp.545-559. *Handbook of North American Indians*, Vol. XIV, William C. Sturtevant general editor, Smithsonian Institution, Washington, D.C.
2010 Hunter-Gatherer Ritual and Complexity: New Evidence from Poverty Point, Lousiana. In *Ancient Complexities: New Perspectives in Precolumbian North America*, edited by Susan M. Alt, pp.32-51. The University of Utah Press, Salt Lake City.
Lechtman, Heather
1977 Style in Technology- Some Early Thoughts. In *Material Culture, Styles, Organization, and Dynamics of Technology*, edited by Heather Lechtman and Robert Merrill, pp.3-20. West Publishing, St. Paul.
Lemmonier, Pierre
1986 The Study of Material Culture Today: Toward an Anthropology of Technical Systems. *Journal of Anthropological Archaeology* 5:147-186.
McGahey, Samuel O.
2000 *Mississippi Projectile Point Guide.* Archaeological Report No. 31. Mississippi Department of Archives and History, Jackson, Mississippi.
Meltzer, David J.
1981 A Study of Style and Function in a Class of Tools. *Journal of Field Archaeology* 8(3):313-326.
Richerson, Peter J. and Robert Boyd
2005 Culture and Genes Coevolve. *Not by genes alone*, pp.191-236. Chicago University Press: Chicago.
Sackett, James R.
1985 Style and Ethnicity in the Kalahari: A Reply to Wiessner. *American Antiquity* 50(1):154-159.
1990 Style and Ethnicity in Archaeology: The Case for Isochrestism. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp.32-43. Cambridge University Press, Cambridge.

Shennan, Stephen
1988 *Quantifying Archaeology*. Edinburgh University Press, Edinburg.
Shindler, Debra L., James W. Hatch, Conran A. Hay, and Richard C. Bradt
1982 Aboriginal Thermal Alteration of a Central Pennsylvania Jasper: Analytical and Behavioral Implications. *American Antiquity* 47(3):526-544.
Smith, Bruce D.
1989 Origins of Agriculture in Eastern North America. *Science* 246:1556-1571.
Steponaitis, Vincas P.
1986 Prehistoric Archaeology in the Southeastern United States, 1970-1985. *Annual Review of Anthropology* 15:363-404.
Steponaitis, Vincas P., Megan Kassabaum, and John O'Hear
2012a *Coles Creek Earthworks and Ritual at the Feltus Mounds in Southwest Mississippi, AD 700-1100.* Poster presented at the Annual Meeting of the Society for American Anthropology, Memphis.
2013, in press Coles Creek Antecedents. In *Medieval Mississippians: The Cahokian World*, edited by Susan M. Alt and Timothy R. Pauketat. SAR Press, Santa Fe.
Steward, Julian H.
1954 Type of Types. *American Anthropologist* 56(1):54-57.
Straus, Lawrence G., David J. Meltzer, and Ted J. Goebel
2005 Ice Age Atlantis? Exploring the Solutrean-Clovis "connection." *World Archaeology* 37(4):507-532.
Suhm, Dee A., and Alex D. Krieger
1954 *An Introductory Handbook of Texas Archaeology* Vol. XXV. Abilene Printing and Stationary Company, Abilene, TX.
Webb, Clarence H.
1981 *Stone Points and Tools of Northwestern Louisiana.* Special Publication No.1, Louisiana Archaeological Society, New Orleans.
Wiessner, Polly
1983 Style and Social Information in Kalahari San Projectile Points. *American Antiquity* 48(2):253-276.
1984 Reconsidering the Behavioral Basis for Style: A Case Study Among the Kalahari San. *Journal of Anthropological Archaeology* 3:190-234.
1985 Style or Isochrestic Variation? A Reply to Sackett. *American Antiquity* 50(1): 160-166.
Williams, Stephen and Jeffrey Brain
1983 *Excavations at the Lake George Site, Yazoo County, Mississippi 1958-1960*. Papers of the Peabody Museum of Archaeology and Ethnology Vol 74. Harvard University Press, Cambridge.
Wobst, H. Martin
1977 Stylistic Behavior and Information Exchange. In *For the Director: Research Essays in Honor of James B. Griffin*, edited by Charles E. Cleland, pp.317-344. University of Michigan, Ann Arbor.