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An Analysis of Lead Shot from Fort Motte, 2004-2012: Assessing Combat Behavior in Terms of Agency

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An Analysis of Lead Shot from Fort Motte, 2004-2012: Assessing Combat Behavior in Terms of Agency

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ABSTRACT

The siege of Fort Motte took place between May 6 and 12, 1781. This battle was part of the American offensive against British posts in South Carolina during the American Revolution. During the siege, British troops were confined within the fort while American Continental forces as well as the South Carolina militia maintained a presence outside the walls. In addition to discussing the general history of the battle, I will specifically discuss the cultural variability of lead shot recovered from this site during archaeological excavation and systematic metal detection between 2004 and 2012. During the mid-eighteenth century, British troops were issued .75 caliber muskets. American Continentals were generally armed with .69 caliber muskets. The South Carolina militia was armed with a variety of firearms including muskets and rifles. Due to the firearm technology of the eighteenth century, it is possible to determine the type of firearm that fired individual lead shot. Surface characteristics as well as the weight and diameter of lead shot can be used to identify individual action. This information, combined with spatial distribution data, allows a close analysis of group and individual combat behavior in the context of the battle. This behavior is then analyzed in terms of agency.

Table of Contents

Acknowledgements iii

Abstract v

List of Tables vii

List of Figures viii

List of Abbreviations xi

Chapter I Introduction 1

Chapter II Theory 13

Chapter III Eighteenth Century Military Culture and Tactics 28

Chapter IV History of Fort Motte 50

Chapter V Previous Archaeological Work 63

Chapter VI Methods 69

Chapter VII Lead Shot Analysis 90

Chapter VIII Conclusion 130

References 139

Appendix A Lead Shot Catalog 151

List of Tables

Table 3.1. Differences between the Jaeger and the American Long Rifle 37

Table 6.1. List of Fort Motte archaeological proveniences: 2005-2012 83

Table 7.1. Fort Motte (Areas 3, 5, and 6) total lead shot summary 94

Table 7.2. Fort Motte (Areas 3, 5, and 6) total lead shot included in weight/diameter analysis 99

Table 7.3. Amalgamation of comparison site data 114

Table 7.4. Area 12 (overseer's house site) total lead shot summary 127

Table 7.5. Area 18 (camp site) total lead shot summary 129

Table A.1. Fort Motte lead shot (Metal Detection Areas 3, 5, and 6 and unit excavation) 152

Table A.2. Spherical lead shot (Areas 3, 5, and 6) not included in weight/diameter analysis 163

Table A.3. Lead shot from Metal Detection Areas 4, 11, and 15 165

Table A.4. Lead shot from Area 12 – overseer's house / Lee's camp site (2004-2012) 166

Table A.5. Area 12 shot not included in weight/diameter analysis 167

Table A.6. Lead shot from Metal Detection Area 18 (camp site) 168

Table A.7. Area 18 shot not included in weight/diameter analysis 169

Table A.8. Area 3, 5, 6 canister shot (2004-2012) 169

LIST OF FIGURES

Figure 1.1. Fort Motte general location map 10

Figure 3.1. Sketch of bore and rifling 36

Figure 4.1. Mrs. Rebecca Motte 51

Figure 4.2. American engineer's drawing of Fort Motte 53

Figure 4.3. American engineer's drawing of Fort Motte, profile view 53

Figure 4.4. Francis Marion 55

Figure 4.5. Henry Lee 55

Figure 4.6. Vauban's sap diagram 57

Figure 4.7. DAR monument 61

Figure 4.8. Property map 62

Figure 5.1. Map of metal detecting areas 65

Figure 6.1. Photograph of hog chewed ball 74

Figure 6.2. Fort Watson total lead shot weight/diameter analysis 76

Figure 6.3. Fort Watson total lead shot distribution by weight 76

Figure 6.4. Three distinct patched rifling marks 78

Figure 6.5. Full barrel patch marks as evidence of minimal windage in a 'smoothbore rifle' 79

Figure 6.6. Surface dimples caused by the rolling process on an unfired .75 caliber musket ball 79

Figure 6.7. Map of expanded 2012 metal detection areas and unit excavation 82

Figure 6.8. The author metal detecting in the expanded Area 3 84

Figure 6.9. Detectorist Spencer Barker marking a find in Area 3 85

Figure 6.10. Layout of 2012 excavation units 88

Figure 6.11. Alison Baker and Jonathan Whitlatch excavating units.............................. 89

Figure 7.1. Total lead shot recovered by date 91

Figure 7.2. Fired lead shot by type (Areas 3, 5, and 6) 97

Figure 7.3. Unfired lead shot by type (Areas 3, 5, and 6) 98

Figure 7.4. Fort Motte total lead shot weight/diameter analysis 100

Figure 7.5. Fort Motte (Areas 3, 5, and 6) total lead shot distribution by weight 101

Figure 7.6. Fort Motte rifle ball (Areas 3, 5, and 6) weight/diameter analysis 102

Figure 7.7. Spatial comparison of .54 caliber rifle balls to all other caliber rifle balls... 104

Figure 7.8. 15g rifle ball distribution by weight... 105

Figure 7.9. 15g/.54 caliber rifle balls by type... 106

Figure 7.10. Spatial analysis of the 15g rifle balls by type 107

Figure 7.11. Fort Watson rifle ball distribution by weight.. 110

Figure 7.12. Williamson's Plantation rifle ball distribution by weight.......................... 111

Figure 7.13. Wadboo Plantation rifle ball distribution by weight 112

Figure 7.14. Black Mingo rifle ball distribution by weight 112

Figure 7.15. Total rifle ball distribution by weight for seven Revolutionary War sites in South Carolina 115

Figure 7.16. Atypical .75 caliber musket ball 116

Figure 7.17. Spatial analysis of .75 caliber musket balls... 117

Figure 7.18. A .75 caliber musket ball with minimal windage 119

Figure 7.19. Very heavy barrel mark on a .75 caliber musket ball 119

Figure 7.20. .75 caliber musket ball weight/diameter analysis 119

Figure 7.21. .75 caliber musket ball weight/diameter analysis based on surface characteristics 120

Figure 7.22. H ramrod mark on 03.009.001 121

Figure 7.23. H ramrod mark on 03.027.001 121

Figure 7.24. Spatial analysis of lead shot with distinctive ramrod marks 124

Figure 7.25. 1948 aerial photograph detailing the spatial distribution of canister at Fort Motte 125

Figure 7.26. Weight/diameter analysis of lead shot from Area 12 (overseer's house) 127

Figure 7.27. Lead shot weight distribution for Area 12 (overseer's house) 128

List of Abbreviations

ABPP .... American Battlefield Protection Program

cmbs .... centimeters below surface

DAR .... Daughters of the American Revolution

GPR .... Ground Penetrating Radar

GPS .... Global Positioning System

NPS .... National Park Service

NRHP .... National Register of Historic Places

SCIAA .... South Carolina Institute of Archaeology and Anthropology

USC .... University of South Carolina

CHAPTER 1

INTRODUCTION

Ivor Noel Hume famously stated that "little can be said about battlefield sites" (1969: 188). However, I argue that a great deal can be said about battlefields and other conflict sites. Archaeological research conducted at conflict sites has been able to offer valuable information pertaining to battle location, tactics, technology, and human behavior that would otherwise not be available (Legg and Smith 2007; Scott 2001; Scott and Fox 1987; Smith et al. 2007). Fox (1993:5) states that "combat behavior is, from the archaeological perspective, no more and no less susceptible to analyses than any other form of human endeavor." Therefore, combat behavior can be analyzed using theoretical ideas rooted in the social sciences, specifically anthropology. This thesis will incorporate the archaeological investigation of the Siege of Fort Motte into a theoretical framework that is fundamentally anthropological. I will examine individual combat behavior evident through a detailed lead shot analysis in terms of agency.

1.1 CONFLICT ARCHAEOLOGY AND THE INDIVIDUAL

Several archaeologists have asserted the possibilities of studying agency from the material record (Dobres and Robb 2000; Dornan 2002; Hodder 2000; Johnson 1989; Robb 2010; Saitta 1994). However, few have studied the material evidence of individual agency (Dornan 2002; Hodder 2000). This is due to the fact that it can be difficult to see the historical actions of an individual. In this regard, conflict sites are uniquely suited to the study of individual action. Battlefields and many other military sites were occupied for a short period of time. Therefore, conflict archaeologists are offered a window into either a single event or a short-term occupation. This increases the “potential to examine not only general human behavior across the site but often individual actions” (Scott and McFeaters 2011: 107).

While much archaeological work has been conducted at conflict sites and several archaeologists (Fox 1993; Scott 2001; Scott and McFeaters 2011) have been able to trace individual behavior on a battlefield, no archaeologist has analyzed such combat behavior in terms of individual agency. Conflict archaeology provides a unique opportunity for such an analysis due to the nature of conflict sites and the fact that agency is most evident within a particular event.

Additionally, in no other area of human behavior is action so highly structured as the military. The soldier has been trained to obey certain rules of conduct. Thus, a study of individual agency and practice is directly suited to conflict archaeology. Military manuals and other historic records provide documentation of ideal and expected combat behavior. While it is understood that these ideals were not always acted upon in real conflict situations, such documents offer a glimpse into normative military action. I will use historical sources that detail normative eighteenth century tactics and compare these to the behavior seen in the archaeological record at Fort Motte and then evaluate individual actions in terms of agency.

1.2 AMMUNITION ANALYSIS AS A MEANS OF OBSERVING CULTURAL VARIABILITY AND INDIVIDUAL ACTION

It is possible to observe individual combatant action based on a detailed ammunition analysis. Conflict sites consist almost entirely of metal artifacts. Among these, ammunition is the most abundant. A close analysis of ammunition can tell us a great deal about military culture, tactics, and individual behavior.

A few archaeologists have suggested the possibility of assessing the cultural variability of ammunition (Drexler 2003; Scott 2001; Scott and Fox 1987). These analyses have focused on the Civil War and the later Indian Wars.[1] Doug Scott and Richard Fox have been especially active in this type of research. Due to the firearm technology of the later nineteenth century, archaeologists (Fox 1993; Scott 2000; Scott 2001; Scott and Haag 2009) were able to determine the type of firearms in use at several battlefield sites. Additionally, these archaeologists were able to use modern forensic methodology to ascertain unique cartridge-case signatures, or firearm-specific grooves and scratches imparted upon each cartridge case during the firing and ejection process (Scott 2000; Scott and Haag 2009). Such cartridge-case signatures have been used to trace individual firearm and combatant movement across a battlefield landscape, giving the archaeologist the "opportunity to observe and analyze a series of individual combatant behaviors within a narrow temporal context" (Scott and McFeaters 2011: 109).

This thesis asserts that a close analysis of eighteenth century spherical lead shot can allow archaeologists to trace and analyze the actions of individual soldiers across a

[1] In his master's thesis Drexler (2003) discusses the cultural variability evident in Civil War artillery ammunition.

battlefield in a manner similar to Scott and Fox (1987) at the Little Big Horn battlefield (Chapter 6). However, there will need to be methodological modifications when assessing individual action and cultural variability based on lead shot recovered from an eighteenth century battlefield. This is due to the differences in firearm and ammunition technology between the American Revolution and the Civil War. Metal cartridges were not used during the eighteenth century so certain forensic methods will not be useful here. However, lead shot from this time period does exhibit a remarkable amount of cultural variation, in the form of surface marks and impressions, which can be analyzed.

At many archaeological investigations of eighteenth century historical sites lead shot is taken for granted; it is assumed to offer limited, if any, information about a site and is often quickly cataloged and never looked at again. However, lead shot can tell us much about a site.[2] A close analysis of spherical lead shot can offer insight into the types of firearms in use at a particular time, the location of various battle events, tactics used, individual action, as well as insight into the daily-life practices of soldiers and militiamen. This thesis will focus its analysis on the types of firearms in use at a single battle (Fort Motte) and the significant information that can be gathered regarding individual combat behavior.

1.3 EIGHTEENTH CENTURY FIREARM TECHNOLOGY

The firearm technology of the eighteenth century makes it possible to determine the use of specific guns from the material record of a battlefield (Legg in Smith et al. 2007; Sivilich 2007). Muskets and rifles made up the majority of firearms in use for

[2] This information is not limited to a battle event, but includes valuable information regarding subjects such as domestic slaughtering and hunting practices.

military engagements at the time. As a result of the different manufacture and technical attributes of rifles and muskets, lead shot for these two types of firearms are dissimilar in size.

It is argued here that eighteenth century spherical lead shot exhibits cultural variability in the form of marks and impression caused by the technology and use of the firearm and as a result of human behavior on the battlefield. At the time of the American Revolution, two general types of muskets were used: the British Land Pattern musket[3] (.75 caliber) and the French Charleville musket (.69 caliber). The British musket fired a large .75 caliber ball. Ammunition for these muskets was produced en masse and was relatively standardized in size and weight (Chapter 3). Thus, it is possible to determine the type of musket used, as well as probable cultural affiliation, based on the size of the musket ball.

However, cultural variability is also determined by archaeological context. Both British and American forces were known to have captured and utilized enemy firearms and ammunition (Bass 1959). Ultimately, there were a variety of weapons in use. In order to determine which side fired an individual ball one needs to look closely at the context in which it is found.

Unlike muskets, eighteenth century rifles were far from standardized and showed distinct evidence of "individual craftsmanship" (Peterson 2000: 194). Rifles were manufactured individually along with a shot mold that would cast lead shot specifically for that particular firearm. Rifle balls were consistently much smaller in

[3] The British Land Pattern musket has come to be commonly known as the Brown Bess musket; however, as it was not known by this name during the eighteenth century, I will avoid using this misnomer.

diameter than any of the musket balls of the time but otherwise differed widely from one another. Rifle balls can range from .30 caliber to .60 caliber, however the most common range during the time of the Revolution was between .50 to .55 caliber (Legg in Smith et al. 2007: 55).

In the material record, one can see individual rifle action based on the frequency and distribution of different caliber rifle balls. Within the context of a single battlefield assemblage, a cluster of a certain caliber may indicate the action of an individual rifleman. Admittedly, there is the possibility that multiple individuals were firing rifles with very similar bore diameters, and therefore the same size shot may be the result of more than one individual. Keeping this in mind, it is still possible to determine the probable action of individual combatants based on a careful analysis of lead shot from a single battle.

1.4 LEAD SHOT ANALYSIS

As discussed above, the diameter of a lead ball can determine the type of weapon that fired it or that was designed to fire it. Critically, the diameter of spherical lead shot is readily determined by its weight even if it has been fired. A weight/diameter analysis of lead shot can be useful for interpreting a Revolutionary War site; a similar analysis was conducted by Daniel Sivilich in 1996.[4] Sivilich (1996: 104) developed a formula that enabled the calculation of a projected diameter of mutilated lead shot.[5] This formula and its use in my analysis will be discussed further in Chapter 6.

[4] Sivilich (1996) focused on the weight/diameter distribution of .69 caliber and .75 caliber musket balls from Monmouth Battlefield, a Revolutionary War site in New Jersey.
[5] Diameter in inches = 0.223204 x (Weight in grams)$^{1/3}$

A few archaeologists (Legg and Smith 2007; Legg in Smith et al. 2007) have conducted detailed analyses of eighteenth century lead shot.[6] However, no one has utilized such an analysis for the purpose of discussing agency in relation to the larger structure of military culture and combat behavior. I will look at eighteenth century tactics in use at the time of the American Revolution and compare the ideal or normative behavior to the actual behavior seen in the archaeological record at Fort Motte. Additionally, I will look at what these individual actions tell us about combat behavior and military culture during the time of the American Revolution. Specifically, how did larger cultural and technological changes affect the range of possible individual action at a mid-eighteenth century battle?

It is imperative that conflict archaeologists be familiar with different cultures and their "manner of war-making" (Bleed and Scott 2011: 49) as culture affects the way a nation or region fights (Hanson 2001). A familiarity with military culture is necessary to decipher behavioral patterns seen in the material record. In his analysis of the Battle of the Big Hole, Scott (2001) specifically looked at bullet and cartridge case distributions to determine where individual guns were fired and aimed. Scott (2001) then used Upton's (1867) proscribed tactics of Army operation as well as contemporary accounts of Nez Perce tactics to assess the cultural affiliation of the combatant behind each firearm.

[6] Legg and Smith (2007) conducted interviews with collectors of the Revolutionary War battlefield of Camden. From this data the authors produced a "generalized lead shot density map" (Legg and Smith 2007: 216). This map showed specifically where the battle was located and which positions received heavier fire. Later Smith and Legg (2007) conducted a controlled metal detector survey of the battlefield. Detected items were documented using GPS technology to mark their exact location. Each artifact was then designated by type. The most common artifact was lead shot, including musket balls and buckshot. Smith and Legg (2007) then generated new maps including both collector and systematic metal detection data.

I will conduct a similar study in which I analyze lead shot distribution patterns and then compare these patterns to normative military practice of the mid-eighteenth century. To do this, it will be necessary to understand individual actions and goals within cultural and tactical changes over time. This focus will help to situate individual soldiers and militiamen within a larger structural framework. Therefore, I will give a detailed background of eighteenth century military culture for both the British and American combatants involved in the American Revolution (Chapter 3). While it is acknowledged that several nations were involved in this struggle, I will focus primarily on the military practice of Britain and the American colonies.

1.5 FORT MOTTE

The Siege of Fort Motte took place on May 6-12, 1781. This small-scale battle was a decisive part of a larger American offensive against British outposts in the southern colonies during the American Revolution (Smith et al. 2007). Brigadier General Francis Marion and Lieutenant Colonel Henry Lee commanded the American Continentals and South Carolina militiamen who besieged Fort Motte, a civilian planter's home that had been fortified by the British in January 1781. As the siege progressed, Marion utilized riflemen to suppress the British defense as slaves under the direction of Lee's Continentals dug a siege approach trench (sap) towards the fort (Smith et al. 2007). After several days of sniping and digging, the Americans decided to end things quickly by setting fire to the fort. The British surrendered on May 12. The siege will be discussed in greater detail in Chapter 4.

The Fort Motte battlefield is located in Calhoun County, South Carolina (Figure 1.1). The first archaeological excavations and systematic metal detection were carried out at the site in 2004. For the purposes of this thesis, additional excavation and metal detection was conducted in May and November of 2012. Archaeological excavations at Fort Motte have revealed much about the practice of eighteenth century tactics and have allowed researchers a better understanding of the fort itself as well as the siege. Excavations have uncovered portions of a moat and palisade constructed by the British around a civilian house. A siege approach (sap) has also been identified. Many of the battle events at Fort Motte have been primarily ascertained through the close analysis of musket and rifle shot recovered from the site.

Initial analysis of the lead shot recovered between 2004 and 2006 indicated that there was an extremely high percentage of .54 caliber rifle balls (Legg in Smith et al. 2007). It was hypothesized that this anomaly represents the sharpshooting activity of an individual rifleman. To test this hypothesis, further metal detection and archaeological excavations were conducted in 2012 in order to gain additional data. The analysis of this data will be presented in Chapter 7 and will include data from all field seasons between 2004 and 2012. Several new conclusions were drawn. Interestingly, after a closer re-analysis of the lead shot, the unique actions of several individuals were able to be seen in the material record.

My analysis indicates that at least two individuals contributed to the deposition of rifle balls within the anomalous data set. This is due to the evidence of both “unrifled 'rifles'" (Legg in Smith et al. 2007: I-5), or smoothbore rifles, as well as true rifle characteristics on the 15g/.54 caliber shot.

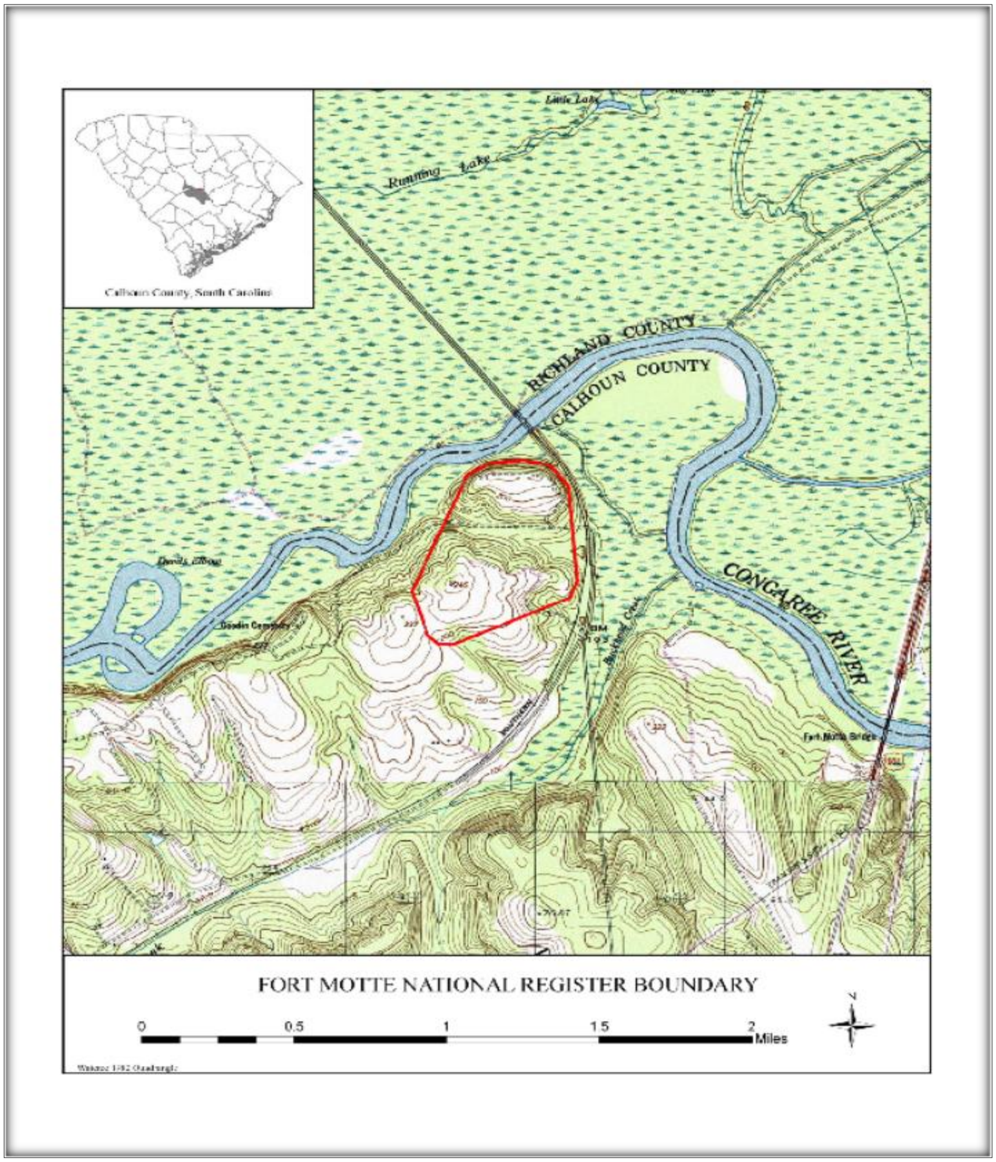

Figure 1.1 Fort Motte general location map

My analysis of agency and practice is not limited to the American riflemen. Perhaps the strongest evidence of intentional individual action comes from the material remains of British or Loyalist troops at Fort Motte. A significant number of fired .75

caliber musket balls were recovered in an oval cluster to the northeast of the fort. Several of these balls have a very strong smoothbore barrel mark, indicating that they were fired from a .69 caliber musket. It is hypothesized that this cluster of shot and specifically the barrel-marked balls are indirect evidence of the American sap. Firing a .75 caliber ball from a .69 caliber musket firearm would minimize the windage (the difference between the diameter of the bore, or caliber, and the diameter of the ball) in a similar manner as a rifle. Firing a ball with minimal windage in the bore of the firearm served to increase the accuracy and distance of the fired ball. The individual firing .75 caliber shot from a .69 caliber musket was attempting to achieve the same goal as a rifleman: he wished to accurately strike a specific target. It is argued that this individual used the knowledge and technology available to him to increase the accuracy of a normal musket thereby increasing his chances of hitting the excavators of the American siege trench.

1.6 CONCLUSION

While I have attempted to give a brief overview of my thesis research in this introduction, it is also necessary to introduce the following chapters. In Chapter 2, I will discuss my theoretical perspective. Here I will offer a detailed look at agency, practice, and structure and their relation to archaeology. Chapter 3 will delve into the history of eighteenth century tactics within the larger history of the American Revolution. This background information is necessary to the understanding of my analysis of lead shot. Chapter 4 will provide a background history of Fort Motte and a detailed account of the siege. All previous archaeological work carried out at the site will be summarized in

Chapter 5. The methods for my thesis research will be discussed in Chapter 6. These include the methods of analysis of lead shot, field methods, and laboratory and curation procedures. In Chapter 7, I will describe the results of my research. I will give a detailed analysis of the lead shot at Fort Motte and compare this data to other Revolutionary War battles in South Carolina. Finally, my conclusion in Chapter 8 will give a comprehensive overview of the lead shot analysis at Fort Motte in relation to individual agency within the bounds of the cultural and technological changes during the eighteenth century.

CHAPTER 2

THEORY

The theoretical perspective of my research builds on social theories regarding structure, *habitus*, and agency. Specifically, this thesis will take into account ideas put forth by Bourdieu, Giddens, and Ortner and will also take into consideration certain arguments from Foucault and Sahlins. I will then assess the practicability of utilizing agency theory to analyze the short-term behaviors of individuals within the larger context of structure. When studying an event such as a battle, one also needs to take into consideration other events that affected it because human agency is only visible at the event level, but it is affected by all other levels of time.

I will discuss the applicability of ideas of agency, structure, and *habitus* to archaeological research. Additionally, it is my intention to discuss the validity of the aforementioned theories and ideas to the study of armed conflict specifically and to determine if there are certain aspects that would need to be modified in order to apply them to a study of conflict archaeology. I will focus on agency as an expression of intentional individual action within the larger structure of normative combat behavior.

2.1 AGENCY THEORY

Agency theory developed as a part of the post-processual movement in the late 1970s and early 1980s and represented a reaction against "deterministic models of human action by acknowledging that people purposefully act and alter the external world through those actions" (Dornan 2002: 304). Specifically, agency theorists analyzed the goals of people as actors and asserted that "people are not uniform automatons" (Dornan 2002: 304). Within archaeology, agency theory has been utilized in several different ways. It has been used to theorize the individual (Hodder 2000), identity (Johnston 2005), power relationships (Ferguson 1992; Joyce 2000), rational action (Bell 1992), intentionality (Bourdieu 1977; Hodder 2000; Johnson 1989), and unintended consequences (Giddens 1979; Johnson 1989; Pauketat 2001).

In the 1970s and 1980s agency came to be understood as intentional action (Robb 2010). In this manner, individuals became more important. Similarly, Whitley (1998) and Robb (2010) stressed the importance of intentional human action. Humans were not simply reacting to environmental stimuli; they were active participants in life and in culture. However, agency was also understood to work within the larger cultural framework of structure; structure was both constraining and enabling to human agency (Bourdieu 1977; Giddens 1984; Robb 2010).

2.2 THE INFLUENCE OF STRUCTURALISM

It is necessary to explore the limitations of individual action. Pierre Bourdieu and Anthony Giddens have significantly contributed to the theorization of the individual within society (Dornan 2002; Robb 2010). Bourdieu and Giddens both "outline the dialectical relationship between 'agent,' a bounded but not determined individual who can alter structures through practice… and 'structure,' the larger, more perduring settings and conditions that result from the ongoing relationships between individuals" (Dornan 2002: 305).

Bourdieu developed 'practice theory' based on ideas of "human domination and resistance to accepted social patterns of inequality" (Dornan 2002). Practice theory looks at how the individual is affected by society and how the individual internalizes social practices. Bourdieu (1977) asserts that individual practices reproduce societal practices through *habitus*. *Habitus* (Bourdieu 1977) can be defined as the unconsciously or subconsciously recurring daily practices, objects, and associations that work to recreate certain aspects of social life. *Habitus* can also be understood as the repetition of certain social arrangements through time.

Habitus is formed in the practice of every-day life in the interactions of social agents and the cultural structure of which they are a part. *Habitus* is the center of structured practice and makes up the basis of a society's structural system. It can be defined as the cultural, social, and physical interactions of an agent since birth. It is assumed as normal. *Habitus* is historical and serves to reproduce historical practices. According to Bourdieu, essentially, nothing really new is ever produced; *habitus* maintains the historical status quo in different present-day manifestations.

The limitations of *habitus* are "set by the historically and socially situated conditions of its production" out of certain cultural environments and contexts and conditions (Bourdieu 1974 and 1980: 447). Social agents are not entirely free, but neither are they completely controlled by structural institutions. Agents are free to do whatever they choose, so long as it is within the certain constraints set forth by the *habitus*.

However, Bourdieu's theory of practice does not take individual will or motive into account (Bourdieu 1990; Dornan 2002). Bourdieu holds that "human action is, on the whole unconscious" (Dornan 2002: 306). I argue that the situation at Fort Motte was far more complex, with individual motive and intention most certainly playing a part. It is constructive to recognize that much of human practice and action is carried out as a result of habit, and that intention and conscious action are not always utilized; however, it should be stressed that a person, at any given moment, is capable of intentional and conscious action.

Giddens builds on Bourdieu's theory of practice but he allows for a more involved individual; the individual is still limited by structure, but is also enabled by it (Giddens 1979; 1993). Individuals are seen to have a more active role in the construction of social structure. People are capable of intentional action; however, Giddens does not discuss individuals' intentions beyond this capability (Dornan 2002). Giddens states succinctly that "every process of action is a production of something new, a fresh act; but at the same time all action exists in continuity with the past, which supplies the means of its initiation" (Giddens 1979: 70). Giddens' theory of structuration asserts that "there is room in every instance of practice for creativity and innovation" (Dornan 2002: 307). Giddens is interested in goal-oriented practice and states that "even the most enduring of habits… involves continual and detailed reflexive attention" (Giddens 1993: 6).

Foucault and Sahlins also influenced discussions of structure and agency. In his essay entitled 'Power as knowledge,' Michel Foucault (1976) offers a discussion of power structures that aids in understanding the broader context of culture change over time. Power is the result of inequality and is always changing, unequal, and unstable. Foucault maintains that power "comes from below," and holds that there are multiple forces of power at play in a given society at a given time (Foucault 1976: 474). This definition can be related to agency, both individual and collective, as it is expressed in resistance. Resistance is inevitable, and like power, it comes from a multitude of sources. Multiple variables exist, as well as multiple resistances and multiple agents. There is not a single form of domination or resistance. Likewise, the strategic tactics used within the system of power-knowledge are not uniform; there are several "possible tactics" and multiple possible paths of action (Foucault 1976: 477).

Sahlins (1981: 67) states that "people act upon circumstances according to their own cultural presuppositions." Cultural presuppositions can be understood both as a form of *habitus* and as an informal social structure. Sahlin's discussion of structure does not align with what has been termed Saussurian structuralism, named after the pioneering work of de Saussure (1906-1911) with the structural formations of language. Sahlins discusses some of the problems of Saussurian structuralism: first, such a theory "privileged system over event" and second it "seemed also to exclude individual action and worldly practice" (Sahlins 1981: 3). To correct this, Sahlins specifically focuses on events but understands the larger context that led up to and will follow from the event. He comprehends that history and past cultural decisions play a large part in the idea of structure as it changes over time and stresses the need to study the "cultural relativity of the event and the responses to it" (Sahlins 1981: 68). In reaction to Saussurian structuralism, Sahlins demonstrates that structure is dynamic; it is both transforming and transformed by social action. Like Giddens, he sees both social action and agency as intentional.

2.3 A CLOSER LOOK AT AGENCY

Giddens (1979), Ortner (2006a; 2006b), and Robb (2010) have all theorized ideas of agency within the realm of social theory. Ortner argues that all social life is intentional and that all actively played social life is goal-driven. She acknowledges that goals change over time but makes the important distinction between "routine practices," which can be understood as *habitus* and "more intentionalized action" which she defines as agency (Ortner 2006b: 135). The agent is not completely free in his or her ability to make decisions and act accordingly. The agent is free only to an extent and is constrained by unequal power relations and competition, or societal structure. Therefore, agency is "always culturally constructed and maintained" (Ortner 2006b: 139).

All agents have the capacity to transform and be transformed. But certain limitations of agency exist. Time and power relations are both important variables governing agency (Giddens 1979: 55). Likewise, forms of power, such as dominance and resistance affect agency because they limit both what an agent can do and what an agent is more likely to do. Giddens states that "it is a necessary feature of action that, at any point in time, the agent 'could have acted otherwise' [sic]" (Giddens 1979: 56). Multiple variables and multiple possibilities increase the complexity of a social system. Similarly, Giddens understands agency as an intentional process. Giddens (1979) stresses the importance of institutions and rules. He argues that people act according to certain rules, but this action feeds back into the rules. Certain conscious and unconscious social and cultural rules are accepted by agents and need to be understood in historical context; these rules can be evidenced in the behaviors and daily practices that they produce. These ideas express the interconnectedness of theories involving structure and agency.

Robb (2010: 493) also understands agency as “a capacity for action.” Agency is contextual and depends on relationships. He states that it is “not a characteristic of individuals but of relationships” (Robb 2010: 494). Archaeologists need to understand the historical background and specific contextual situation of agency for proper interpretation. Agency is also inherently material because people use objects and objects effect people’s decisions. Therefore, a discussion of materiality is also necessary. Robb (2010) specifically discusses agency from the view point of archaeology. He acknowledges that agency has been a “notoriously ambiguous concept” (Robb 2010: 493). However, it can also be very useful.

Robb discusses past approaches to agency within archaeology in three thematic stages. The first trend formed around the basis that agency could be understood as intentional action (1970s and 1980s). Research at this time focused on the perspective of ambitious individuals seeking power. These past actions were seen to lead to the institutionalization of social hierarchy. In this way, agency was seen as “the individual’s ability to effect his or her will or intention” (Robb 2010: 496). However, Robb states that this view makes assumptions about human behavior: action is only analyzed in terms of intentionality and it is assumed that some people are not motivated to seek power. Robb critiques this approach, asserting that it may work for an analysis of elites, but what about the rest of society? He argues that agency is not something possessed by individuals; rather, relationships are fundamentally important. The author states that "the intentional pursuit of goals is possible only through complicity with power structures, cultural ideas, [and] ways of behaving" (Robb 2010: 499).

The second trend of agency in archaeology is that it came to be understood as dialectic (1990s). Agency was "*not* an individual's ability to affect others; it is the dual, socially reproductive quality of action" (Robb 2010: 497). However, Robb states that this approach also makes assumptions. He asserts that people act within culturally specific social structures, but action is not limited by these structures. Additionally, actions can cause both intentional and unintentional modifications to structures and lead to social change. He addresses all of these factors as the "landscape of action" defined as the "set of possibilities and challenges formed by the past" (Robb 2010: 498).

Agency needs to be understood within specific historical contexts or "fields of action" (Robb 2010: 499). Agency is best understood in terms of 'projects' through which goals are pursued. Agency develops from certain "shared understandings" that are contextually developed (Robb 2010: 500). Robb asserts that "in acting within a field of action, people act creatively, varying what they do to accomplish a proximate intention. Individual actions are often less embedded in habit, time and space; though often habitual, they are readily learnt and unlearnt" (Robb 2010: 501). How an individual carries out an action or task is very important because this is where individual variation occurs. Robb states that “such variation encompasses many of the individual strategies of competition, emulation, innovation, redefinition, resistance and subversion” (Robb 2010: 501).

The third change that Robb discusses is that agency came to be seen as relational (2000s). This approach deals with material agency, networks, and “the mutually constitutive relationships between agents and their material and social contexts” (Robb 2010: 502). Specifically, linking relationships are important because the capacity for action stems from participation in these relationships; the individual cannot act in isolation. Robb also discusses the possibility of collective agency. He gives the example of a soldier, saying that it is “really a collectivity which is acting through the individual hand” (Robb 2010: 503). However, just because a soldier has been trained to act collectively does not mean that the individual soldier will always do so. Robb goes on to state that “group behavior is usually a negotiated compromise which is shaped by both individual and group agendas but is reducible to neither” (Robb 2010: 503).

The particular context of agency needs to be analyzed by looking at fields of action. A person decides why to act, the field of action determines how. Relationships between people and things are also important to an archaeological analysis involving agency as the production and use of an object depends on and recreates specific cultural relationships (Robb 2010: 513).

2.4 AGENCY IN ARCHAEOLOGY

Several archaeologists have utilized aspects of agency theory in their research (Bell 1992; Dobres 2000; Dornan 2002; Hodder 2000; Joyce 2000; Pauketat 2001;

Pauketat 2013; Shanks and Tilley 1987; Yarrow 2008). One researcher states that "within archaeology, the inclusion of the notion of agency has clearly expanded the analytical abilities of archaeology to address previously ignored aspects of the past" (Dornan 2002: 309). Below, I will briefly discuss some archaeological work involving agency theory that is related to my own research.

Hodder (2000) stresses looking for creativity and intentionality over long periods of time. He "suggests that it is through an examination of individual lives in light of historically significant 'dimensions of experience,' that we can access and legitimately evaluate past human agentive actions" (Dornan 2002: 310). Specifically, he looks at how structure is evident within individual lives. Dornan (2002) asserts that this is problematic methodologically, however, as it is usually difficult to pick out a single individual from archaeological data, especially when one is attempting to analyze individual agency over a lifetime, as did Hodder (2000).

Bell (1992: 39) also acknowledges the difficulty of ascertaining individual motives and intention due to the fact that "there are normally a wide variety of ideas and motives amongst individuals." Therefore, Bell asserts that agency theory should be utilized only for human actions in situations where motives and ideas are generally similar (Bell 1992). In the majority of human action, it is difficult to determine what the normative action should be; however, a regulated military environment, for which there is written material documenting expected behavior, is an ideal situation to analyze intentional agentive action in the context of regulated practice.

Several authors (Dornan 2002; Pauketat 2001) support a move away from the idea that individuals should be the unit of study within agency theory. These authors support a primary focus on long-term structural changes. Pauketat’s (2001) ideas regarding the relation of agency and technology within the larger structure of society can relate to the analysis presented in this thesis. Cultural, technological, and behavioral changes are evident in the individual actions at Fort Motte. However, it should be stressed that this theoretical position needs to be utilized in addition to an understanding of agency theory that allows for conscious and intentional action.

Dornan (2002) and Bell (1992) assert that much archaeological research involving agency only looks at the generic individual. They ask if it is even possible to identify a true individual. Methodological problems might arise in the analysis of the agency of an individual over a long period of time. However, it is much more reasonable to analyze individual agency within the realm of an event, specifically if the archaeological data are indicative of unique individual actions. Dornan (2002) and Johnson (2002) assert that the use of agency theory with a focus on individual intentionality is relatively rare within archaeology; most archaeologists utilizing agency theory focus on collective agency. However, Dornan (2002) suggests that a focus on the individual has potential.

Since the 2000s, ideas of materiality have become more important (Robb 2010). Discussions of materiality stem from post-processual ideas such as agency. Materiality focuses on material culture and advocates close analysis of artifacts in order to discuss broader research topics ranging from gender to social and spatial organization. For many researchers, objects are seen as agents affecting cultural change as much as people (Preucel and Meskell 2004). Joyce (2005: 151) discusses two more conservative opinions of material agency: Mauss (1992) stressed that material objects can be understood as "bodily extensions" and Hayles (1999) called objects "prostheses." Similarly, Robb (2010) asserts that materials can be perceived to initiate action. He gives an example of a gun, stating that "it is neither the gun which kills somebody nor the person holding the gun, but rather the network of human plus gun – a network which includes the qualities of both" (Robb 2010: 505).

Gell (1998: 16) argues that agents are seen as intentionally initiating action. However, materials can also be perceived to initiate action. Therefore, "agents are whoever or whatever people consider them to be, but it is always people rather than things which are doing the considering" (Robb 2010: 505). In this mode of thought, things are "secondary agents" (Gell 1998: 20). Several archaeologists (Gosden 2005; Gosden and Marshall 1999; Joy 2009) have considered the agency of objects. Gosden (2005: 193) specifically analyzes the ways in which things influence people and asserts that the form of an object "lays down certain rules of use" that impact human perceptions and actions. Gosden (2005) asserts that in this way, things cannot be thought of as passive. Joy (2009: 552) asserts that an artifact should be analyzed using a "relational approach" which stresses the interaction between the object and people. I assert that while material culture, such as firearms, certainly affects the choices of human agents, it cannot replace people as primary agents.

Material culture has three possible meanings: structural (can be in several fields of action), generic (the specific field of action), and contextual (details specific to the user of the object). Robb argues that the generic meaning of material culture has received little attention but is pivotal to the study of agency; "humans necessarily always act within a particular field of action" (Robb 2010: 507). Within these fields of action, individuals selectively utilize material culture and knowledge of technology and social structures to achieve specific goals. This will be discussed further in Chapter 8.

2.5 AGENCY AT FORT MOTTE

Following the above discussion of the various viewpoints concerning structure, practice, and agency, I would like to define these terms specifically for use in this thesis; below I provide my own definitions. 'Structure' is understood as the overarching cultural environment including normative social practices, technological and material entities, historical realities, as well as perceptions and ideologies regarding all of these. 'Practice' is defined as normative, habitual action. By 'agency' I mean goal-oriented, intentional, individual action. Agency may be based in habit and regular action, but it involves creative intention in the manner that it is carried out.

Overall, many of the theories regarding agency, *habitus*, and structure mentioned above will work quite well in the interpretation and analysis of a Revolutionary War site, specifically Fort Motte. However, some minor modifications will need to be made. First, in addition to a daily-life *habitus*, militiamen and Continental soldiers would also have a modified military-life *habitus*. They were enlisted into a new culture, with its specific objects, practices, ideals, and language that, although not entirely different than those of daily-life, are diverse enough to warrant a more detailed analytical focus. In the process of their military experience, these individuals had to relearn ways of acceptable socialization. Otterbein (2004) specifically advocates the close study of weapons as an individual learns to use weapons as a part of this socialization. Second, individual agency is limited by several things: environment, time, place, power relationships, *habitus*, and structure. Ultimately, all of these variables need to be understood together to give a more holistic understanding of a highly complex conflict such as the American Revolution.

Otterbein (2004: 4) states that "the social and political organization of a people… spawns and maintains the military organization of a people." Warfare is one of a society's methods to intentionally pursue goals. Similarly, Scott and McFeaters (2011) assert that conflict is an aspect of larger culture or cultures. The authors view the combatants within a conflict as "a subcultural unit that mirrors the greater society's cultural ideals, constraints, and orientation" (Scott and McFeaters 2011: 105). Individual action is seen as constrained, but also "patterned by the changing technologies of warfare that developed in the cultural and social context of the particular combatants" (Scott and McFeaters 2011: 107).

Bleed and Scott (2011: 42) state that warfare "builds on the actions of individuals." Persons, ideally, did not act in a way that was greatly in exception to the general cultural practices of the time. The ability to shoot a firearm was a skill that American colonists along the frontier and in the backcountry needed for hunting and protection on a daily basis. During the Revolution, this *habitus* would have been modified in the structure of certain behaviors. A soldier ideally fought within the culturally acceptable structure of war and with certain fighting techniques that were socially imposed upon him.

The material aspect of these actions can be seen in the archaeological remains at military sites. The individuals who participated in combat left behind “residues of their efforts” (Bleed and Scott 2011: 42). Bleed and Scott (2011) address the combined group dynamic and its representation in organized patterns of behavior visible in the distributions of material remains, specifically the distribution of ammunition.

CHAPTER 3

Eighteenth Century Military Culture and Tactics

In order to recognize both short-term and long-term structural changes present in the practice of military culture in the mid-eighteenth century, it is essential to have an understanding of military culture in the American colonies as well as Britain and other European countries in the late seventeenth and early eighteenth centuries. It is also necessary to understand the differences in the types of firearms in use at the time and their effects on the tactics utilized during the American Revolution. I will discuss tactical differences in the northern and southern colonies to further illustrate the structural conditions that were in place prior to the siege of Fort Motte.

3.1 COLONIAL TACTICS

In the sixteenth and seventeenth centuries, European armies fought in set-piece battles using linear tactics (Becke 1909). These battles consisted of parallel lines of men facing off on open ground. These tactics persisted into the eighteenth century and will be discussed in more detail below. American colonists initially attempted to use linear tactics in their military encounters with Native Americans. However, European formations were not feasible in wooded terrain against an enemy that refused to fight in a similar manner. Life on the frontier and the environmental conditions in the American colonies caused a shift away from European linear warfare to irregular warfare. Irregular warfare included more fluid hunting tactics which were acquired during the wars against certain Native Americans living along the eastern coast.

Malone (1991) discusses the influence of Native American tactics on New England colonists. Rather than fighting out in the open, Native American tribes “made the terrain and vegetation their allies” (Malone 1991: 21). Mobility and aimed fire were quintessential to Native warfare. Practice and years of experience were required to attain precision with the bow and later with firearms (Burke 1991). Native Americans used these weapons in a functionally similar manner.

Malone (1991: 21) asserts that “the warriors retained more individual freedom of action than did soldiers in the disciplined ranks of a European army.” Native warriors specifically singled out an opponent and aimed their weapon at him. They held no reservations about aiming at officers and leaders, and frequently picked them out first. This was incredibly disturbing to the colonists, who considered this type of behavior “unsportsmanlike” (Malone 1991: 88). Colonists condemned these tactics as “devious ‘skulking’ instead of real warfare” (Malone 1991: 23). One colonist (Gookin in Malone 1991: 24) complained of Indians fighting “more like wolves than men.”

The interaction with Native American tactics caused a shift in colonial tactics that led to “many departures from standard European military practices” (Malone 1991: 60). In the forest environment of New England, fighting against an opponent that refused to fight in pitched battle, colonists were forced to adapt their own method of warfare despite their original contempt for irregular tactics and aiming (Malone 1991). Malone

(1991) asserts that a modification in tactics had occurred by 1676; colonists began to use terrain and vegetation for cover, aim at specific targets, and utilize loose formations.

The American colonists on the western frontier developed into the American "back-woodsman" (Hanger 1814: 190). The average American frontiersman can be contrasted with the English layman. In England, "hunting was the sport of the upper classes" (Malone 1991: 52); commoners were outlawed from hunting. Additionally, hunting with firearms was not especially popular, regardless of class. Firearm usage was generally restricted to militia training or military campaign. However, in the colonies, skill with a firearm was a necessity, both for food and protection. Greene (1973: 59-60) states that the "wilderness conditions and later the lack of many of the traditional restraints and supportive social institutions that the colonists had had in England had early forced men to rely heavily upon their own resources" (Greene 1973: 59-60). The American colonist usually only had one firearm that functioned for both military and civilian uses. On the frontier, this firearm was most often a rifle.

Like the influence of native tactics, the development of the American rifle in early eighteenth century would cause continued changes in colonial tactics in America. By the time of the Revolution, the American backwoodsman was associated with the rifle; he was a natural marksman because of his environment (Hanger 1814; Plaster 2009). He was practiced at aiming and knew distances. American riflemen would "act at such loose order, as to imitate the subtle art of the Indian, who endeavours [sic] always to steal away the life of an enemy, without exposing himself to danger" (Hanger 1814: 186).

Despite the association of the American backwoodsman with the rifle, the flintlock musket was the standard weapon of the colonial militia in long-settled areas such as New England (Malone 1991). The colonists "were still restricted by allegiance to cultural traditions and to standard military practices of their age" (Malone 1991: 66). These cultural traditions and standards were largely set by Britain. American colonists fought alongside the British against the French and their native allies during the French and Indian War (1754-1763). In this conflict, American colonists utilized both linear and irregular warfare. However, European stress on linear warfare led to American military ideals that favored European tactics. By the American Revolution, there was a major shift in colonial tactics back to linear warfare. This shift in tactical ideals will be discussed further below.

3.2 EIGHTEENTH CENTURY FIREARMS

<u>The Flintlock Musket</u>

The conventional firearms of the eighteenth century were flintlocks that loaded from the muzzle and used black powder. Two primary firearms were in employed during the American Revolution: the musket and the rifle. The flintlock musket was a smoothbore firearm. It was quick to load because the musket ball fit loosely in the barrel. For example, a .75 caliber British musket fired a ball about .690" in diameter from a barrel .750" in diameter. The difference between the caliber (the diameter of the bore) and the diameter of the ball is called *windage*.

Musket balls were generally used with paper cartridges that included a "pre-measured charge of black powder" (Sivilich 2007: 84). In such cartridges, the ball and powder charge were rolled together in a sealed paper tube. To load a musket, a soldier would tear the tip of the cartridge open and pour a small amount of powder into the pan. Then he would pour the remaining powder into the muzzle of the musket, drop the lead shot down the barrel, and use the ramrod to ensure everything was firmly within the barrel. The soldier would then present his musket, point it in the general direction of the enemy, pull back the hammer, and fire.

When fired, the musket ball struck the inside of the barrel and being ejected, glanced off in the general direction of fire. This allowed for only moderate accuracy. Eighteenth century muskets were relatively accurate at close range between 50-80 yards (Babits 2002; Hanger 1814; Moore 1967). Beyond that, however, accuracy was out of the question. One witness of a musket's accuracy observed that "as to firing at a man at 200 yards with a common musket, you may just as well fire at the moon and have the same hopes of hitting your object" (Hanger 1814: 205). Despite their inaccuracy, flintlock muskets were the standard military weapon because of their rate of fire; muskets could fire up to four times in a minute (Plaster 2009). As will be discussed below, rapidity of fire was highly prized in linear warfare.

At the time of the American Revolution, European weapons trended toward standardization. In Britain, "the Government standard for military flintlocks was quite high" (Miller 1978). The British "Ordnance system of manufacture" began in 1715 (Bailey 1971: 9) and the British standardized musket, which later came to be commonly known as the 'Brown Bess,' was produced beginning in the 1720s. This system allowed the Board of Ordnance to closely supervise and inspect parts that were contracted out

(Bailey 1971). The Board of Ordnance provided patterns of parts that were made by type: barrels, locks, etc.

During the mid-eighteenth century, two patterns were used. These were the Long Land Pattern and the Short Land Pattern (Bailey 1971). These patterns produced the English Long Land Pattern musket and English Short Land Pattern musket, respectively. The difference was in barrel length. Both Land patterns, and other British muskets manufactured between the 1720s and the 1830s, were all .75 caliber muskets (Moore 1967: 61). British muskets were all "of fairly uniform caliber" (Peterson 2000: 164). The British issued these .75 caliber smoothbore flintlock muskets to the regular British infantry.

In France, a system of firearm standardization was also in use. The French Charleville musket was produced on a large scale. Moore (1967: 63) discusses the fact that "Charleville is a generic term often used to designate eighteenth-century French military muskets" (Moore 1967: 63). These firearms have been named after one of the arsenals where the muskets were produced. In reality, the firearms were actually manufactured at several French arsenals for government issue (Moore 1967). All of these weapons were standardized .69 caliber smoothbore flintlock muskets.

Along with the creation of standardized muskets, European nations also developed standardized ammunition. Jorgensen (2005: 57-8) states that "by 1738 every nation had issued their infantry with cartridges." Because of the standardization of British and French muskets, these nations were able to mass produce quantities of lead shot. Stephenson (2007: 138) cites the use of "Gang molds," which could produce multiple musket balls at once. Lead shot was manufactured by pouring molten lead/lead alloy into a two-part mold. The lead was allowed to cool, and then it was removed. The *sprue*, or bit of lead attached to the ball due to the molding process, was cut off along with any 'flashing' around the mold seam (Sivilich 2007: 84). These musket balls were quite standardized in size, weight, and lead composition based on the nation for which they were produced. Thus, eighteenth century spherical lead shot can be said to exhibit a certain amount of cultural distinctiveness.

During the American Revolution, Charlevilles were imported from France and distributed to the Continental Army. The majority of firearms used by American forces after 1777 were French; "in 1776 and 1777 American commissioners procured over 100,000 obsolete muskets" (Madaus 1981: 50). American forces certainly used British muskets if they were available; but they generally had greater access to the French Charleville muskets (Peterson 2000: 176). Early in the War, American forces also used American reproductions of British muskets. These guns may have had greater variation as to caliber; however, they still would have been relatively uniform and very close to .75 caliber.

Other smoothbore firearms such as carbines, fusils, and pistols of several calibers were also in action during the Revolution (Peterson 2000: 209-212). Carbines were shoulder arms with a shorter barrel than either rifles or muskets. They were ideal for mounted men and were utilized by cavalry, dragoons, and artillerymen (Moore 1967: 65). The 1764 standard British carbine was about .66 caliber (Peterson 2000: 170).

Additionally, not all muskets were produced for military use; some were also produced for trade. Trade guns, as these firearms came to be called, were made specifically for trade with Native Americans "according to standards calculated to satisfy the wishes and requirements of the intended Indian consumers" (Burke 1991: 3). Trade guns were light weight, smaller caliber smoothbore flintlock muskets. They too were relatively standardized, as they were produced by several different gunmakers "according to an established pattern" (Burke 1991).

<u>The Rifle</u>

Unlike the musket, which was developed primarily for military use, the rifle was produced for hunting. Rifles were handcrafted and were far from standardized (Lagemann and Manucy 1993; Peterson 2000). Riflemen cast their own shot in individual molds suited to the exact caliber of their weapon (Stephenson 2007).

The technology of rifling stems from German gunsmiths. *Rifling* can be defined as a set of spiral grooves that is cut into the bore of a gun. Rifles usually had seven grooves (Moore 1967). The raised areas between the grooves were called *lands* (Figure 3.1). The lands would actually cut into the surface of the lead ball as it was fired. Rifling created a spin on the fired projectile and increased stability in flight and accuracy (Hagie 1946; Madaus 1981). Moore (1967) states that the grooves gave the projectile a three-quarter turn in the barrel. However, several authors (Hanger 1814: Lagemann and Manucy 1993) describe the grooves as giving one full turn in the barrel.

The Jaeger rifle was produced for hunting in the forests of Germany and Austria; however, this type of firearm was also used in a military context. Jaeger riflemen were not very common as the skillful use of a rifle required much practice and training over time (Hanger 1814). In European military action, these riflemen utilized different tactics than eighteenth century musketeers. Hanger (1814) discussed "Hessian and Hanoverian jagers" participation in the Seven Years' War. The Jaegers fired from the woods, using natural vegetation as cover. Hanger (1814) explicitly noted the exceptional marksmanship of these riflemen. The fact that these men aimed at specific individuals with such lethal accuracy led to extreme reprisal by the opposing force. This type of fighting behavior was seen as unnatural. Hanger (1814: 130) remarked that "the French were so incensed that day, against the jagers, that a few of them which they took, wounded, in the retreat, for the German forces were beaten, they buried up to their chins in the ground, and left them to die."

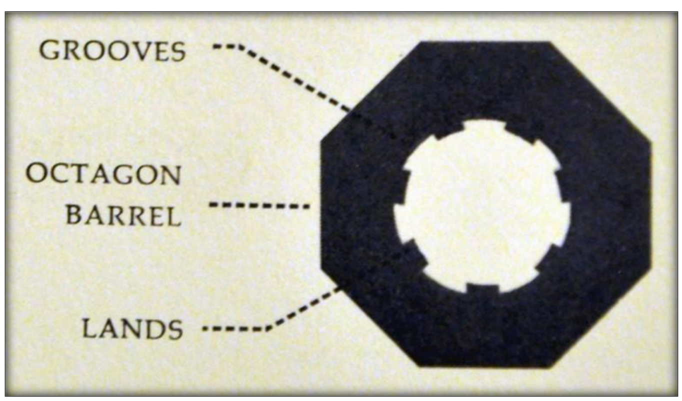

Figure 3.1 Sketch of bore and rifling (Moore 1967: 56)

German gunsmiths brought a tradition of hunting with rifles with them when they settled in Pennsylvania at the beginning of the eighteenth century (Lagemann and Manucy 1993; Madaus 1981; Moore 1967). However, rifles were adapted to the needs of American colonists (Lagemann and Manucy 1993; Madaus 1981; Moore 1967).

Adaptations were almost universal in the colonies by 1775 (Lagemann and Manucy 1993). These adaptations created a rifle that was quite different from the original Jaeger rifle (Figure 3.2). This colonial firearm came to be known as the American Rifle, Long Rifle, or Pennsylvania Rifle.

Changes included a lengthened barrel (Lagemann and Manucy 1993) and a smaller bore (Moore 1967; Plaster 2009). The Jaeger rifle was larger than .60 cal. as compared to the .35 - .60 cal. American rifle (Plaster 2009). The American rifle also took less powder, less lead, and was more efficient; its lightweight and fast projectile was more accurate whereas the Jaeger rifle ball was heavier and slower.

Table 3.1 Differences between the Jaeger and the American Long Rifle (Lagemann and Manucy 1993: 6)

	The Jaeger	*The Long Rifle*
Length of barrel	28 inches	40 inches or more
Caliber	.60 to .70 caliber	.35 to .60 caliber
Stock	heavy	long and thin
Weight	about 7 pounds	7 to 10 pounds

A key element in loading the rifle was *patching*, or wrapping the projectile in a piece of greased linen. Patching allowed for a slight decrease in the diameter of the ball, which made it easier to load lead shot into the muzzle while still maintaining a tight fit within the bore (Lagemann and Manucy 1993; Madaus 1981). Patching also quieted the sound of the ram rod forcing the lead shot down into the barrel (Lagemann and Manucy 1993).

An American rifle took much longer to load than a smoothbore musket; it could take up to two minutes to load, aim, and fire (Plaster 2009). To load the rifle, one would measure and load “with powder first; then put a ball on the mouth of the rifle with a greased patch, so that the ball may go down tolerably tight, and fit well in the grooves, as a ball should do in a rifle-gun” (Hanger 1814: 133).

Jaeger rifles were accurate up to 200 yards (Plaster 2009). American rifles were accurate between 200-400 yards (Moore 1967). Exceptional shots were noted at the maximum range. One of these, a 400 yard shot during the American Revolution, was documented by Hanger (1814). He observed an American rifleman shoot a horse out from under an orderly directly behind himself and General Tarleton. Based on his experience in the American colonies, Hanger (1814: 122) stated that “I never in my life saw better rifles (or men who shot better) than those made in America.” Grancsay (1967: vi) asserts that “the Pennsylvania Rifle’s principal value was that most of the men who used it were trained marksmen. In Europe, since only the privileged could hunt, there were comparatively few marksmen, but in America the entire country was a hunting ground, and a man’s life often depended on his ability to shoot accurately.”

The American rifle developed as a hunting weapon to cope with specific conditions on the frontier; however, at the time of the Revolution there had developed “an entirely new set of conditions which called for a return to European tactics” (Peterson 2000: 156). While rifles were still favored for their use in hunting along the frontier and in the colonial backcountry, muskets became the standard military arm of the American colonies.

3.3 EIGHTEENTH CENTURY MILITARY CULTURE

Rules of Warfare

"By 1715 most European states were maintaining large standing forces" (Jorgensen 2005: 46); professional armies were the norm by the mid-eighteenth century. These armies required training and discipline. Therefore, strict standards were maintained. The eighteenth century was a time of increased writing and study regarding warfare and tactics. At this time there were several attempts to create certain rules for warfare (Luvaas 1979; Puysegur 1748; Vauban 1740); military practice was largely based on these rules (Becke 1909; Luvaas 1979). Battles were "set, conventional pieces" (Becke 1909: 4). Armies "played the game according to certain rules, and when they lost according to the accepted rule they submitted as gracefully as they could" (Becke 1909: 3). Becke (1909) gave examples of several typical or conventional battles and discussed European tactics in the Seven Years' War. The primary rule of European warfare in the eighteenth century was that "soldiers fought opponents who were willing to accept battle under mutually advantageous situations" (Malone 1991: 32).

European tactics of the eighteenth century were linear, in which the main action was between infantry. The formation of an army was aligned to face the front of the enemy's formation, creating parallel lines of opposing forces. Opposing lines usually faced off within 40-100 yards of each other (Stephenson 2007). Therefore, most armies favored muskets, as at that range, such firearms would be relatively effective against tight line formations. Madaus (1981: 13) describes linear formations as "lines of soldiers, two ranks deep, standing shoulder to shoulder to permit effective volley fire." There were typically two lines, each three ranks deep (Becke 1909). The first line engaged the enemy while the second line was held in reserve. Ranks fired successively: so that "the rank that fired first should be once more ready to fire by the time all the other ranks had emptied their muskets" (Becke 1909: 3). Each soldier fired three to four shots per minute. The goal was to "keep up an almost incessant fire" (Becke 1909: 9).

Volley fire from the line was to be the decisive factor in battle; "the idea was to bring about the destruction of an enemy by a single smashing blow that destroyed all in front of it, and tore the very heart out of the enemy's further power of resistance" (Becke 1909: 12). It was military practice to fire two or three volleys before engaging the enemy with bayonets (Moore 1967).

Peterson asserts that, in this type of warfare, "rapidity of fire was prized much more highly than accuracy" (Peterson 2000: 163). Aiming was not of primary importance. Becke (1909: 8) describes musket volleys as "unaimed fire." Aiming was only conducted in a general sense; for example, Hanger (1814: 201) states that soldiers in the line were ordered "*to aim where they perceive the enemy to stand the thickest* [sic] in numbers." He goes on to assert that "NO MAN WAS EVER KILLED, AT TWO HUNDRED YARDS [sic], by a common soldier's musket, BY THE PERSON WHO AIMED AT HIM [sic]" (Hanger 1814: 205).

Cavalry and artillery were also utilized in linear warfare. The cavalry was generally held in reserve and used for flanking maneuvers. The artillery functioned to slow the infantry's advance using grape or canister shot. Skirmishers also had a place in linear warfare. Becke (1909) states that there was mention of these light troops from 1745 on. However, the primary force on the field of battle was the infantry.

The Militia System

Colonial militias were based on the English militia system which "required that each citizen arm himself at his own expense with a suitable military weapon" (Madaus 1981: 12). The English system preferred the militia to be armed with muskets. Rifles were not generally used in England prior to the late eighteenth and early nineteenth century. Even then, they were used mostly by the upper classes. Therefore, many of the mandates regarding colonial militias gave preference to the use of the musket.

In his discussion of the colonial militia system, historian Michael Stephenson (2007: 6-19) appraised the cost of an eighteenth century firearm to be approximately two weeks' wages. Not every individual could afford a firearm, specifically if it was not needed on a daily basis. Individuals who lived along the frontier and in the backcountry regularly utilized firearms; however, increasing settlement, urbanization, and cultivation in the older colonies led to a decreasing reliance on the firearm for anything other than militia use (Stephenson 2007).

Militias met several times during the year to train, usually once a month. However, there was no real instruction in aiming or accuracy; most time was spent training men to properly load and fire a musket (Malone 1991). The militia consisted of men between the ages of sixteen and sixty. Exemptions existed for estate holders and others; therefore the militia was drawn from the lower orders of the white, male, and property-holding population (Stephenson 2007).

3.4 THE REVOLUTIONARY WAR

The Revolutionary War was caused by structural changes in the American colonies (Greene 1973). Due to rapid population growth in the colonies, British policy became increasingly difficult to carry out; governors and other British officials lacked the force necessary to implement many imperial instructions (Greene 1973). Additionally, the majority of the colonial male population (60-90%) regularly participated in local politics (Greene 1973: 38). This led to considerable autonomy. Economic development in the American colonies after 1750 in addition to Britain's mounting debts after the Seven Years' War motivated the British government to take strong positions. Between 1759 and 1776 British policies were designed to keep the colonies firmly under control. However, these policies were seen as oppressive by many of the colonists and led to a demand for independence.

Despite calls for independence from the political tyranny of Britain, the colonies continued to depend on Britain for "normative standards" (Greene 1973: 60). Military practice was no exception. During the French and Indian War (1756-1763), American militiamen fought alongside the British and became indoctrinated in linear warfare once again. Therefore, in 1776 at the outbreak of the Revolutionary War, American military leaders based their field tactics on those of their former sovereign nation. A study of Revolutionary War battles (Moore 1967: 59) shows that the majority were fought "in the accepted European fashion, with the men standing in close ranks and firing volleys."

In terms of military strategy and policy, the Americans endeavored to fight the British on equal terms. The American colonies attempted to form a fighting force that could stand against the discipline and regimentation of the British army. The Continental Army was strongly influenced by European military standards and was the most disciplined and trained force originating from the American states during the Revolution. "Washington did everything in his power to fight the war on European lines" (Stephenson 2007: xxii). Therefore, the Continentals were trained in corporate linear tactics. As a result, all of the major American victories of the Revolution were fought according to linear tactics in set piece battles.

Riflemen

British forces were armed almost exclusively with muskets. However, the British also hired Hessian jaeger riflemen (Grancsay 1967). Rifles utilized by these individuals would have been similar to the German rifles mentioned earlier. The British also hired Hessian infantrymen armed with smoothbore muskets (Plaster 2009). Thus, it would be imprudent to analyze all Hessian troops as riflemen as the vast majority were armed with muskets.

As the British favored the musket, so did the Americans. Therefore, American "riflemen did not fit the standardized mold of a national army" (Stephenson 2007: 133). Riflemen were seen as unpredictable and undisciplined. However, the use of riflemen in battle changed over the course of the war and was largely based on regional differences. During the Revolution, muskets were utilized more heavily in New England while rifles tended to be used more in the central and southern colonies (Grancsay 1967).

Although valuable in certain circumstances, rifles were seen as a secondary and often unwanted weapon on the battlefield. Riflemen were used as flankers and sharpshooters (Moore 1967). These “riflemen-sharpshooters” never exceeded five percent of the Continental army (Plaster 2009: 41); however, there existed several American companies made up solely of riflemen (Moore 1967; Plaster 2009). In these companies, “individual marksmanship was prized and volley fire disdained” (Bruce 2009: 9). Twelve such companies were formed in Boston in June 1775 (Plaster 2009). Initially these companies were successful; however they were disbanded after eight months. While a few riflemen were maintained as scouts, most were transferred to smoothbore-musket regiments.

The weakness of rifle companies was a result of their deployment in linear warfare; rifles did not come equipped with bayonets and “the bayonet often decided the battle outcome” (Lagemann and Manucy 1993: 25). Bruce (2009: 9) succinctly describes the tactic of a bayonet charge “after the enemy had been well softened by musketry.” When riflemen were deployed to fight against British companies armed with bayonets, without reinforcement from their own bayonet-wielding musketeers, the riflemen were easily overrun. While riflemen were armed with hunting knives and tomahawks for hand-to-hand fighting, “these lacked the reach of a bayonet-tipped musket” (Bruce 2009: 9). In the time it took to load, aim, and fire a rifle, the smoothbore-armed enemy would have time to fire up to eight volleys before charging with bayonets (Plaster 2009). Hanger (1814) described such an action involving Morgan’s riflemen in America. He stated that Colonel Abercromby “ordered his troops to charge them with the bayonet; not one man of them, out of four, had time to fire, and those who did, had no time given them to load again" (Hanger 1814: 200).

Therefore, the problem was not with the rifle, but with the use of the rifle. In 1776 and 1777, the Provincial Congress again called for the creation of a separate rifle regiment (Bass 1959: 15; Plaster 2009: 41). Colonel Daniel Morgan's rifle regiment was very successful against Burgoyne's army by sniping and utilizing irregular tactics.

Generally, however, the Continental Army was rather disenchanted with the rifle on the field of battle. Many American military leaders discouraged riflemen from joining the regular line (Peterson 2000: 200). Additionally, there was a negative British image of the American rifleman. British soldiers showed no mercy to riflemen who were not armed with bayonets. Thus, to go into battle armed only with a rifle was deemed to be a very risky decision, a risk many officers were unwilling to take.

Riflemen were useful in certain circumstances, but according to Peterson, rifles "had little effect on the overall arms picture" (Peterson 2000: 156). This was certainly true of the conflict in the northern colonies. In the southern campaign, however, riflemen played a larger role. American officers such as Francis Marion and Thomas Sumter utilized riflemen regularly in military engagements.

3.5 THE REVOLUTIONARY WAR IN SOUTH CAROLINA

As the fighting in the north reached a stalemate, the War "shifted south" (Plaster 2009) in 1780 with the British siege of Charleston, South Carolina. Bass (1959: 114) argues that "the operations in the Carolinas were almost a separate war." In the south, battles continued to be fought using linear tactics. However, partisan warfare was also being conducted (Bruce 2009; Smith 2010; Stephenson 2007). Partisan warfare consisted of ambush and hit-and-run tactics. The partisans were significantly outnumbered by British forces. Therefore, they attempted to isolate and overwhelm the opposition by stealth, specifically targeting supply routes. These tactics were influenced by the Native Americans' 'skulking way of war' (Malone 1991; Stephenson 2007). Generally, it was the militia that conducted partisan warfare as the Continentals almost exclusively employed linear tactics.

South Carolina partisan leader Francis Marion was known for his quick attacks and retreats (Smith 2010). Marion targeted strategic positions such as bridges and river crossings, and used the terrain, specifically the swamps of South Carolina, to his advantage. Marion's base camp was on Snow's Island, hidden in the swamps (Rankin 1973; Smith 2010). Marion's men could attack and quickly retreat back into the wetlands, where the British were unlikely to follow. If the British did follow, they could be easily picked off as they were unable to use linear formations in the dense swamp vegetation. Additionally, Marion's militiamen were all mounted, which increased their success with partisan tactics (Smith et al. 2007).

Rifles were especially useful in partisan warfare. Colonel Watson (Watson in Bass 1959: 155), after crossing the Sampit, wrote of Marion and his riflemen, "They will not sleep and fight like gentlemen… but like savages are eternally firing and whooping around us by night, and by day waylaying and popping at us from behind every tree!"

At the battle at Williamson's Plantation, popularly known as the Battle of Huck's Defeat on July 12, 1780, American riflemen made use of trees and fences as natural cover for their advance. This allowed them time to take careful aim at their opponents (Scoggins et al. 2011). Likewise, at King's Mountain on Oct. 7, 1780, sixteen hundred American riflemen defeated British provincial troops (Bass 1959; Lagemann and Manucy 1993; Plaster 2009). Tactics here included sniping, loose formations, and can be understood as irregular warfare. The partisans used similar tactics at the skirmish at Wadboo Plantation which occurred on August 29, 1782. American riflemen used trees and other large objects to protect themselves from direct fire while taking time to aim and pick off individual opponents (Smith et al. 2008).

The majority of the military leaders in South Carolina continued to fight in set battles according to the linear tactics of the time. However, at the Battle of Cowpens on January 17, 1781 General Daniel Morgan successfully integrated "accurate rifle fire and smoothbore musket volleys" (Plaster 2009). He ordered the militia to fire twice and then fall back as the British charged with bayonets. The Continentals were then ordered to come forward and fire in volleys into the charging line.

South Carolina partisan leader Francis Marion was constantly frustrated by the militia and viewed them as unreliable (Smith et al. 2007). Under South Carolina law the militia was required to only serve thirty days when called up (Bass 1959). However, Marion remarked of the militiamen in a letter to Gates (Marion in Bass 1959: 98) that "I seldom have the same set a fortnight." Nathanael Greene praised the officers of the South Carolina militia, but complained that "the people with them just come and go as they please" (Greene in Bass 1959: 175).

Marion had several riflemen under his command at various times during the Revolution, as is evident from historical sources as well as archaeological evidence (Ferguson 1973; Scoggins et al. 2011; Smith et al. 2007; Smith et al. 2008). Because of the transitory nature of the militia, Marion is thought to have maintained several skilled riflemen throughout the war, men whose skill and loyalty were assured.

McCottry's Riflemen served under Francis Marion and were designated as "sharpshooters" (Bass 1959: 148) and "crack shots" (Bass 1959: 177). Captain William McCottry himself was "credited with killing an enemy officer at 300 yards" (Plaster 2009: 76-7). McCottry's riflemen also played a pivotal role in the siege of Fort Watson (Ferguson 1973; Ferguson 1977).

These men cut off the British access to their water supply and were essential to the American victory at this battle. Fort Watson was constructed atop the Santee Indian mound and stood at least thirty feet higher than the surrounding ground (Lee 1869). Therefore, the attacking American forces built what is now known as "Maham's tower" (Ferguson 1973: 6) to give them the advantage. Three or four riflemen climbed into the tower and were able to fire down into the fort (Ferguson 1973; Ferguson 1977; Lee 1869; MacKay 1781). In his journal, Mackay described this event, writing that "in the Afternoon brought down a Wooden Machine which they had built… for their Marksmen to pick off our Centinels" (Mackay 1781 quoted in Ferguson 1973: 44). The riflemen, "having thorough command of every part of the fort" (Lee 1869: 332) forced the British to surrender.

A Sergeant McDonald[7] was also a noted rifleman sharpshooter associated with Marion. In March 1781, "Red-headed Sergeant McDonald set a mark for the snipers. Climbing unperceived into one of the large oaks that lined the avenue to Witherspoon's house, at three hundred yards he put a rifle ball through the knee of Lieutenant George Torriano of the Guards" (Bass 1959: 150). He was also commended for brave action at Spring Hill and Georgetown (Bass 1959). As will be discussed in Chapters 4 and 8, McDonald may have been one of the sharpshooters active during the Siege of Fort Motte.

[7] Lieutenant by May 1781 (James 1821: 121)

CHAPTER 4

History of Fort Motte

4.1 THE MOUNT JOSEPH PLANTATION

Prior to the construction of Fort Motte, the site was part of the Mount Joseph Plantation located in Amelia Township along the Congaree River. In the mid-eighteenth century this area was considered to be part of South Carolina's backcountry. The Mount Joseph Plantation property was owned by Rebecca Motte (Figure 4.1) at the time of the siege. Born Rebecca Brewton (June 15, 1737-January 10, 1815), she was the daughter of a wealthy and influential Charleston family. She married Jacob Motte on June 11, 1758 (Edgar and Bailey 1974:480-481). The couple openly supported the patriot cause (Helsley 2009: 115). Jacob was actively involved in colonial politics, and later served in the First, Second, and Third General Assemblies (Edgar and Bailey 1974: 480-481; Smith et al. 2007: 12). Jacob died in 1780.

Considerably wealthy in her own right, Rebecca Motte inherited the Mount Joseph Plantation from her brother, Miles Brewton, in 1775 (Helsley 2009: 114). Brewton lived in Charleston, but owned several plantations in the South Carolina backcountry including Mount Joseph. A Loyalist, he was very active in South Carolina politics; from 1763-1772 he served as a member of the Commons House of Assembly and in 1775 was also elected to the First and Second Provincial Congress (Edgar and

Bailey 1974: 96-97; Smith et al. 2007). However, while traveling to Philadelphia in 1775, he and his immediate family perished at sea (Edgar and Bailey 1974: 97).

Figure 4.1 Mrs. Rebecca Motte (Lossing [1860]2004: 150)

The Mount Joseph Plantation was possibly used for stock-ranging or growing indigo (Smith et al. 2007: 14). Rebecca constructed a large two or three story house on the property. Lieutenant Colonel Henry Lee (Lee 1998: 345) described the Motte home as a “large, new mansion-house” indicating that the home was newly constructed. Additionally, a smaller structure was located on the adjacent ridge to the north, variously called an ‘overseers house’ (James 1821: 120), a ‘log cabin’ (Bass 1959: 189), and a ‘farm house’ (Lossing 1860[2004]: 150).

At the time of the British occupation, Rebecca Motte and two unmarried daughters were present at the Plantation. “The British made it a practice of seizing the home of the most prominent local rebel as a means of subduing the surrounding local population” (Smith et al. 2007: 15). Rebecca was a devoted supporter of the American cause and “supplied South Carolina’s soldiers with rice, beef, pork, corn, and fodder” (Helsley 2009: 115; Smith et al. 2007). The British had previously occupied and fortified the nearby Belleville Plantation home between November 1780 and February 1781.[8] However, early in 1781 they abandoned this post and moved all men and supplies to the newly constructed Fort Motte on the Mount Joseph Plantation (Sumter in Conrad et al. 1995: 67).

4.2 FORT MOTTE

Fort Motte was constructed around the Mount Joseph Plantation mansion between January and April of 1781 (Smith et al. 2007: 18). It consisted of a moat and palisade surrounding Rebecca Motte’s two or three story plantation house (Figures 4.2 and 4.3). The wooden palisade stood approximately nine feet high and was constructed within a few feet of the house (Conrad et al. 1995; Smith et al. 2007). This palisade would have protected the first two stories. “Earthen fortifications” (Smith et al. 2007: 21) included a ditch (moat) six feet deep and an earthen rampart approximately 10 feet wide, which was constructed with dirt from the excavated ditch. In addition, a row of abatis, intended to break up an enemy charge, was also placed within thirty yards of the palisade. As this was a relatively small fort, the majority of the British and Hessian troops occupying the post would have camped outside the walls. The well was dug outside the walls as well (Sumter in Conrad et al. 1995: 193).

[8] It is uncertain why the British did not initially occupy and fortify the Mount Joseph Plantation, as it was located in a more strategic and defensible position than Belleville. However, Elizabeth Motte Pinckney (Pinckney 1780; Smith et al. 2007: 15-17) describes a smallpox outbreak which affected members of the Motte household and neighboring plantations. This may have been the determining factor for the fortification of Belleville instead of Mount Joseph in 1780.

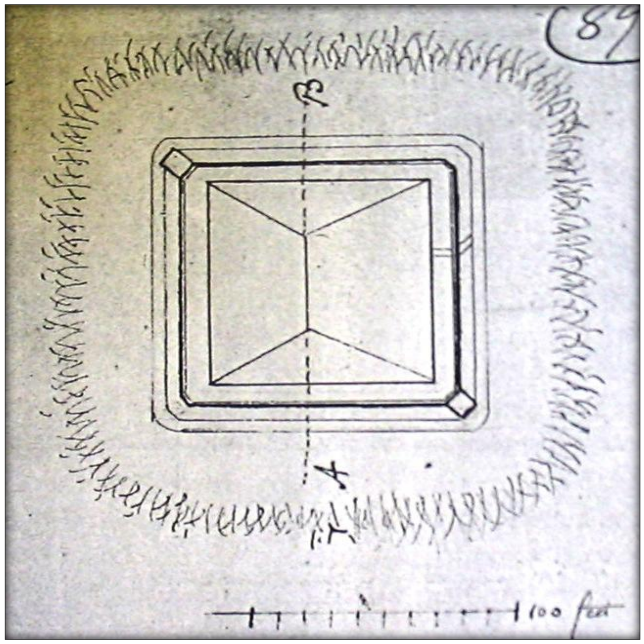

Figure 4.2 American engineer's drawing of Fort Motte (modified from Conrad et al. 1995: 252)

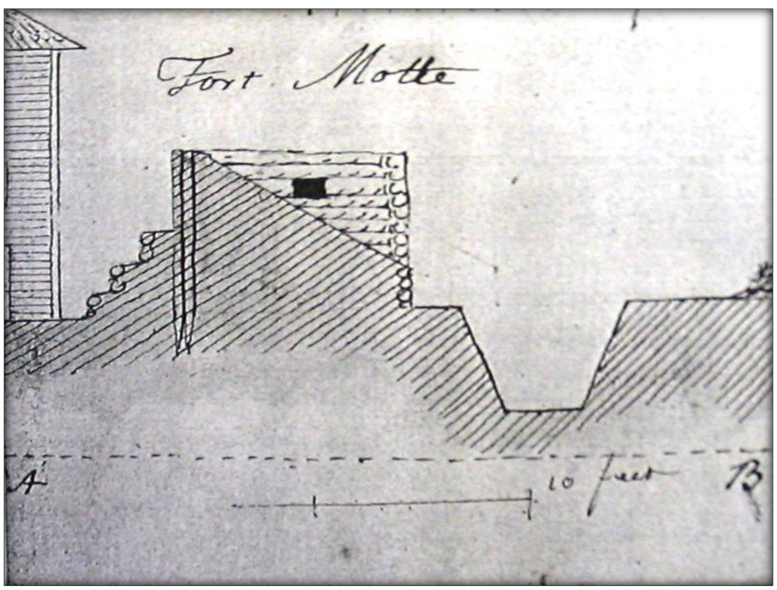

Figure 4.3 American engineer's drawing of Fort Motte, profile view (modified from Conrad et al. 1995: 252)

The Mount Joseph Plantation home was a located in a strategic position on a bluff overlooking the Congaree River near McCord's Ferry (Bass 1959). At the beginning of 1781, the British controlled the majority of towns in the South Carolina backcountry as well as the supply routes that connected them to Charleston. Fort Motte was used as a British outpost, part of the line of forts which provided protection to the main supply route between Charleston and other backcountry outposts such as Camden (Ferguson 1977). In 1781, Fort Motte was the primary British station west of the Congaree (Smith et al. 2007).

The War of Posts

The Americans had great success at the Battle of Cowpens in January 1781.[9] After Cowpens, the main British field army, under Cornwallis, chased General Nathanael Greene into North Carolina, but both commanders soon returned to South Carolina. On March 15, 1781, the British, under Cornwallis, won a victory at Guilford Court House; however, they suffered severe casualties. The battle at Guilford Courthouse was fought as "a classic set-piece 18th [sic] century battle" (Smith et al. 2007: 18). After the battle, Cornwallis retreated into North Carolina and Virginia and Greene turned toward Colonel Francis Lord Rawdon at Camden. In the spring of 1781, Rawdon commanded the British field forces in South Carolina while Greene commanded the American forces in the Carolinas (Pancake 1985). American forces were beginning to turn the tide of the war in South Carolina; however, the British still occupied the major towns in South Carolina and maintained strong posts to protect their supply routes from Charleston.

At this time, Greene ordered Brigadier General Francis Marion (Figure 4.4) and Colonel Henry Lee (Figure 4.5) to join forces and attack the British posts near Camden (James 1821). In a letter to Marion on April 28, 1781, Greene (Greene in Bass 1959: 182)

[9] American General Daniel Morgan defeated the British Colonel Tarleton (Smith et al. 2007:18).

ordered them to "take all the posts upon the Congaree, and those that lie between Camden and the River." They were to start with Fort Watson.

Figure 4.4 Francis Marion (Lossing [1860] 2004: 150)

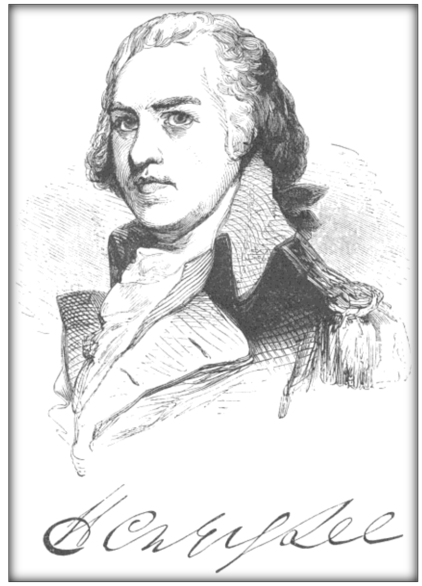

Figure 4.5 Henry Lee (Lossing [1860]2004: 63)

The attack on Fort Watson began what has come to be known as the 'war of posts' (Smith et al. 2007: 19). This was a major American offensive against the British posts and fortifications and supply routes in the South Carolina backcountry. As discussed in Chapter 3, Fort Watson was constructed on the summit of Santee Indian Mound, a 23 foot tall mound overlooking Scott's Lake. On April 15, 1781 Marion and Lee began an eight day siege of the fort. The capture of Fort Watson gave Marion and Lee the supplies, ammunition, and morale necessary to attack the nearby Fort Motte (Smith et al. 2007).

<u>The Siege of Fort Motte</u>

The siege of Fort Motte took place between May 6 and 12, 1781. British forces totaled 184 men, including 80 Regulars (84th Regiment), 59 Hessian troops, and 45

Provincials (Smith et al. 2007: 22). Lieutenant Donald McPherson held command. While the British were equipped with one artillery piece, it was not in place and remained unused during the siege. On May 6, Marion and Lee encamped near the fort. Marion and Lee's joint force totaled 398 American militiamen and Continentals; Lee commanded approximately 248 men while Marion commanded 150 (Marion in Conrad et al. 1995). "Colonel Lee had posted his Continentals to the north of Mount Joseph and around an old log cabin in which Mrs. Motte was then living" (Bass 1959: 189; Smith et al. 2007: 24). Lee (1869: 345) also asserted that his camp was located around the Motte farmhouse on the hill to the northwest of Fort Motte. Marion utilized the nearby Belleville Plantation for himself and his militia (Smith et al. 2007: 23).

Beginning their attack, the Americans surrounded the Fort and set up several firing stations. One American asset was a six-pounder artillery piece under the command of Captain Ebenezer Finley, a Continental artillery officer (Smith et al. 2007: 21). An artillery mound was constructed to the east of the fort. The six-pounder was positioned to rake the north side of the fort.

It would have been a costly endeavor to cross the open field and the row of abatis before traversing the earthen fortifications and wooden palisade of Fort Motte. Therefore, Marion and Lee decided against a direct assault and opted instead for "digging a sap, or siege approach" (Smith et al. 2007: 23). Slaves from Belleville, Mount Joseph, and perhaps other neighboring plantations set to work digging a sap towards the fort (Smith et al. 2007). The sap started within "400 yards of the fort" (Lee 1869: 345). As will be discussed further in Chapter 7, the sap was dug in a zig-zagging pattern towards the fort. This was the norm of eighteenth century siegecraft (Jorgensen 2005; Vauban 1740) (Figure 4.6).

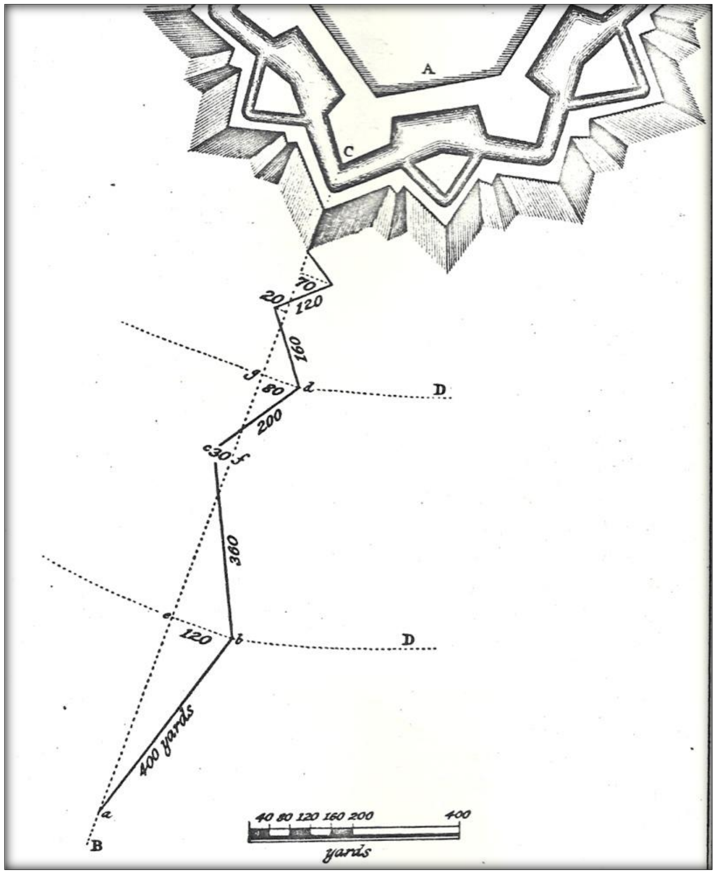

Figure 4.6 Vauban's sap diagram (Vauban 1740: 45)

As Lee oversaw the digging of the sap, Marion deployed sharpshooters against Fort Motte. Bass (1959: 189) makes mention of "sniping" during the siege and Smith et al. (2007: 23) state that Marion set "riflemen firing at the fort to keep the British heads down and off the fort wall." Smith et al. (2007: 55) also state that "only with rifles could the Americans hope to inflict casualties on the defenders, or at least pin them down well enough to suppress defensive fire directed at the siege approaches." The use of a musket under these circumstances would have been ineffective. A rifle could accurately fire at those in the fort while keeping the shooter of such a weapon out of the British range of fire.

Lieutenant MacDonald (mentioned in Chapter 3) may have been one of the rifleman sharpshooters active during the siege of Fort Motte. He had been previously noted for brave action at Spring Hill and Georgetown and was known to have been an excellent shot (Bass 1959). As discussed below, he was also one of the American casualties sustained at Fort Motte.

Lee and Marion planned to dig the sap as close as possible and have Lee's Continentals rush the fort (Lee 1869; Smith et al. 2007). By May 10, the sap had nearly reached the row of abatis. The Americans sent a message to offer McPherson the chance to surrender; he rejected their demand. However, it was soon learned that Rawdon had abandoned Camden (Smith et al. 2007). On the night of May 11, Rawdon's campfires could be seen in the distance and both British and American forces involved at Fort Motte believed that Rawdon was coming to the aid of the British defenders (Lee 1869: 346). Lee and Marion decided they needed to act immediately to capture the fort before reinforcements could arrive. Their solution was to set fire to the Motte house and force a surrender.

The Americans set fire to the roof of the house (Lee 1869; Rawdon in Gibbes 1855: 79), likely using fire arrows (Smith et al. 2007). When British defenders climbed onto the roof in an attempt to extinguish the flames, the American six-pounder was utilized to drive them back inside. McPherson quickly understood his situation and surrendered the fort. The fire was put out after the Americans accepted McPherson's surrender. Two American casualties were sustained including Lieutenant Allen MacDonald and Lieutenant Cruger (Smith et al. 2007: 26-27). However, these fatalities were understood as “considerable losses” for Marion (Bass 1959: 194). No British casualties were sustained during the siege. However, at least three British Provincials were hung after their capture (Smith 1782; Smith et al. 2007). A fourth was being strung up when Marion put an end to the unauthorized executions. Levi Smith, the commander of the Loyalist troops at Fort Motte, as well as a local informer and spy, narrowly escaped with his life (Smith 1782).

After McPherson surrendered, the palisade was torn down and the moat backfilled (Conrad et al. 1995: 293; Smith et al. 2007). All of the British officers captured at Fort Motte were paroled. Rawdon had abandoned Camden and, instead of making for Fort Motte, as both parties involved in the siege had assumed he would, he instead made for the British post at Nelson’s Ferry (Smith et al. 2007).

The War of Posts continued. American Colonel Thomas Sumter took the British post at Orangeburg on May 11 and when Greene arrived at Fort Motte on the evening of May 12 he sent Lee north to capture Fort Granby, and Marion east to take Georgetown (Smith et al. 2007). Fort Granby fell to Lee on May 15 and Georgetown was taken May 28.

Compared to other Revolutionary battles, Fort Motte was a small-scale victory. However, it was “significant as part of the ‘War of Posts’ that broke the British hold on the South Carolina backcountry” (Smith et al. 2007: 1). Ultimately, the American capture of Fort Motte “signaled the imminent collapse of British control” (Smith et al. 2007: 34).

4.3 POST-SIEGE HISTORY OF SITE AND LAND USAGE

After the war ended, Rebecca Motte sold the property and moved to a plantation on the Santee River (Smith et al. 2007: 34). A historian named Benjamin Lossing visited the Fort Motte area in 1849 (Lossing [1860]2004: 148) and wrote that the original Motte home had been destroyed by the fire set during the siege and had to be rebuilt. At the time of Lossing's visit, the site was owned by Mr. William Love who had built another house over the site of the original Motte house. However, an account by Major James ([1821]1948: 121) tells a different story and indicates that the Motte home was habitable in November 1781. James' account suggests that the fire did not completely destroy the Motte mansion.

Also, several mid to late nineteenth century artifacts have been recovered at the site and are especially prevalent along the ridge to the west of Fort Motte. These items include several Civil War military artifacts and may indicate a Civil War encampment at the site during the mid-nineteenth century.

More recently, the area was used during the late nineteenth and early twentieth century as a dairy farm called the Moye Plantation (Smith et al. 2007: 9). The site is currently located on two hills along the Congaree River in Calhoun County, South Carolina. Both hills are bounded on the north and west sides by the Congaree River and on the east by Buckhead Creek. The property is owned by Mr. Luther Wannamaker and includes 298.58 acres (Figure 4.8).

Figure 4.7 DAR monument

Terracing in the latter half of the twentieth century has altered the slope to the north of the fort. Bulldozing removed the artillery mound to the east of the fort. Additionally, ongoing agricultural and timbering activities have had an effect on the site.

The property is gated to restrict unauthorized access. However, relic collectors have been active at the site since the late eighteenth century. More recently, relic collectors have made use of metal detectors on the property. This activity has affected the quantity of artifacts remaining at the site and must be taken into consideration in any analysis of metal artifacts recovered from Fort Motte.

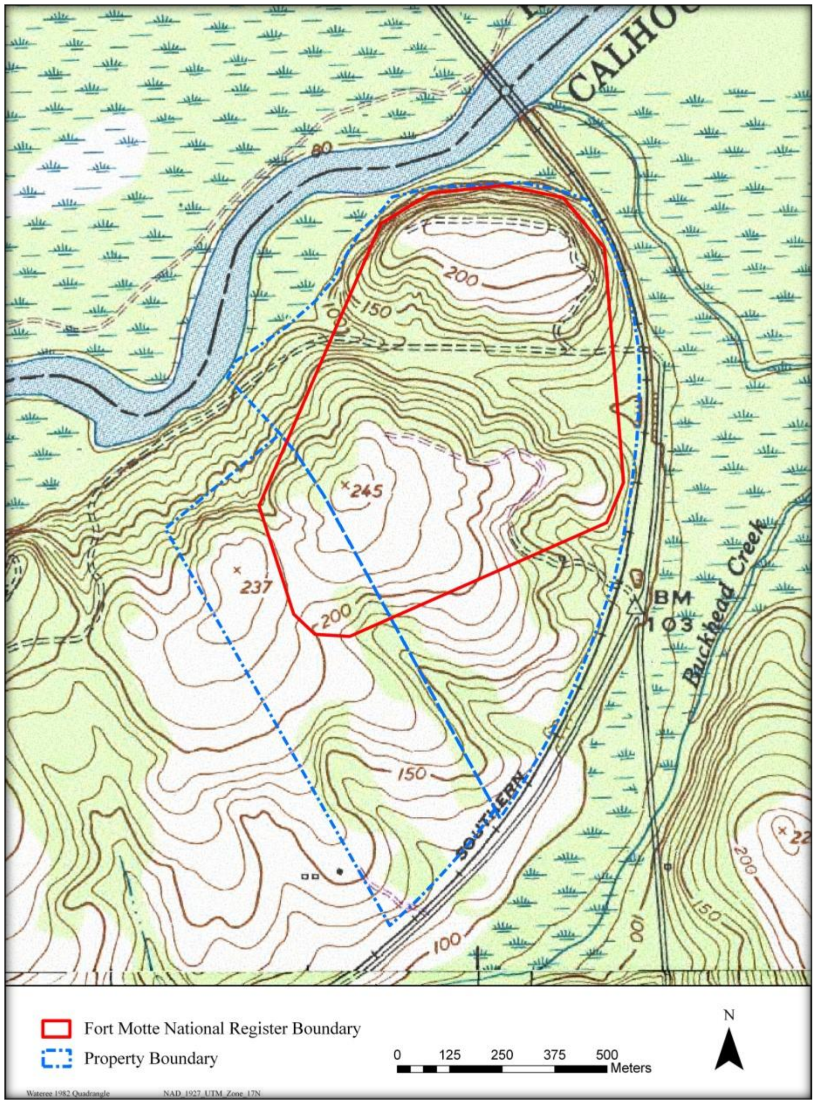

Figure 4.8 Property Map (copied from Smith et al. 2007: 9)

CHAPTER 5

Previous Archaeological Work

Data for this thesis came from several archaeological field seasons between 2004 (Smith et al. 2007) and 2013. In this chapter I will summarize the archaeological work at the Fort Motte site (38CL1) prior to 2012. On August 15, 2004 the National Park Service, American Battlefield Protection Program (ABPP) awarded SCIAA with grant No.GA-2255-04-011 to conduct an archaeological survey of Fort Motte (Smith et al. 2007: 1-2). This survey was intended to provide additional data in order to revise the 1972 NRHP assessment and expand the site boundary to include the entire battlefield.

Dr. Steven D. Smith and other archaeologists from SCIAA worked at the Fort Motte site as they were able between 2004 and 2006 (Smith et al. 2007: 10). During this time both metal detection surveys and controlled trench excavations were conducted. Specifically of interest to this thesis, a total of 108 lead shot were recovered from all archaeological work conducted at Fort Motte prior to 2012.

Various methods were used to locate these artifacts. The primary objective of all archaeological work conducted prior to 2012 was to locate the battlefield's defining features; these included Mrs. Motte's house, the farmhouse, the American sap, the artillery mound, and camp locations for both sides. Archaeologists attempted to locate other outbuildings and features as well; however their location was a secondary goal. Methods included metal detecting, excavation, and GPR survey, in addition to minimal surface collecting around the Daughters of the American Revolution (DAR) monument. Archaeologists from SCIAA also used KOCOA analysis (Key terrain, Obstacles, Cover and concealment, Observation and fields of fire, and Avenues of approach and retreat) to assist in the location of defining battlefield features.

Metal detection was the primary means of finding battle-related artifacts surrounding the fort. In total, the metal detection survey between 2004 and 2006 covered approximately four acres (Smith et al. 2007: 4). This acreage includes the area immediately surrounding the fort as well as other areas related to the battle (Figure 5.1). The metal detection survey carried out around the fort was conducted in a systematic manner. Metal detection areas were blocked off and flagged. Two or more metal detector operators walked in overlapping transects within the designated blocks. Transects were approximately 1.5 meters wide; operators used the plow rows as guide lines. Operators worked with excellent surface visibility around the DAR monument as the field had been recently cultivated with oats.

Metal detectors used included a Fisher 1270® with a 9” coil, a “Double Eagle” with a 15” coil, a Whites Sierra Madre® “Blue Max Deep Scan 950” with a 9” coil, and a Tesoro® Cibola with a 9” coil (Smith et al. 2007: 4-5). All metal detector readings were immediately excavated by the detector operator. Each artifact was put into a plastic bag and given a unique provenience number. The find location was then marked with a pin flag which was marked with the same number as the artifact. The pin flags were then mapped using a Sokkia® total station transit (Smith et al. 2007: 4). For the most part, artifacts dating later than the eighteenth century were not collected.

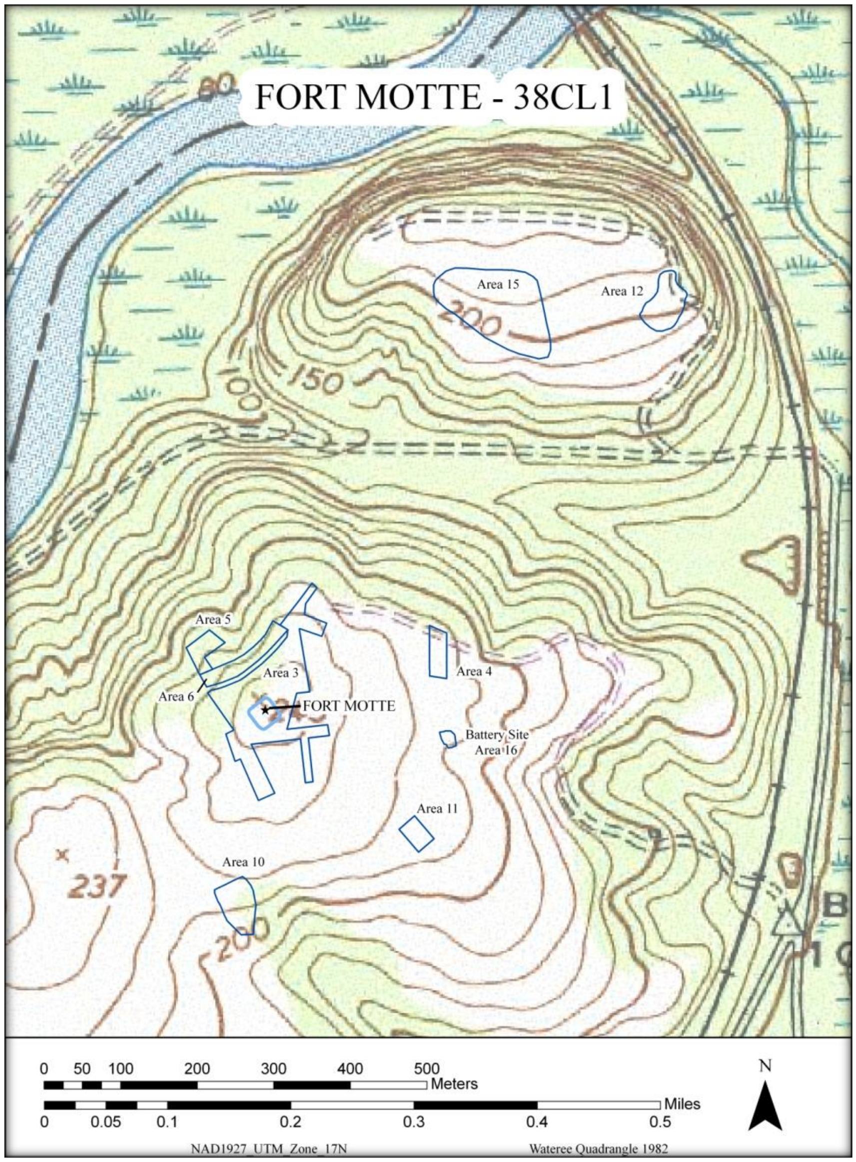

Figure 5.1 Map of metal detecting areas (Smith et al. 2007: 46)

Metal detection in areas other than the main fort position included an attempt to locate the American artillery position which was historically positioned to sweep the north wall of the fort (Smith et al. 2007: 7). However, the artillery mound was leveled due to logging activity in the 1980s. Aerial photographs from 1937 and 1948 show its position to the east of the fort moat. Using these photographs and modern maps of the area, archaeologists attempted to locate the exact position by systematically metal detecting the area. The positions of American and British camp positions were also sought. Lee's men are recorded as camping at the overseer's house (Lee 1869: 345) while Marion's men supposedly camped closer to the fort (Smith et al. 2007: 7). Both areas were systematically detected.

A 'search to find' method was used to search the rest of the property, specifically focusing on 'likely' locations (Smith et al. 2007: 7). When an eighteenth century artifact was located, a ½ acre area was blocked off and covered more intensely in a systematic manner. Artifacts were excavated, bagged, and given provenience numbers. Artifact locations were recorded using a GPS. GPS instruments used included Trimble, Inc models Geoexplorer and Geoexplorer3®. At least 120 readings were taken for each find, in order to provide "sub-meter accuracy after data processing" (Smith et al. 2007: 7). The GIS software used in data processing was ArcGIS® version 9.

A Ground Penetrating Radar (GPR) survey of the fort area was also conducted in order to help locate fort features such as the moat, palisade, house foundation, and chimney. The GPR survey was carried out in the area near the DAR monument as well as along site grid lines. More information on this GPR survey can be found in Smith et al. (2007: 6-7).

Additionally, a limited trench excavation was conducted across the fort area (Smith et al. 2007: 4). The primary objective of the trench excavation was to locate and assess the fort. One meter and ½ meter wide trenches were excavated across the site near the DAR monument and near the highest concentration of eighteenth and nineteenth century surface artifacts. Additional trenches were placed to the north of the fort in an attempt to intercept the American sap (Smith et al. 2007: 6). Trenches were dug along north/south and east/west gridlines and were excavated with shovels. Plow zone soils were not screened (Smith et al. 2007: 5).

A segment of the moat surrounding the fort was also excavated. All feature fill was screened through ¼" wire mesh screen. All artifacts were collected, bagged, and given unique provenience numbers. Archaeologists maintained feature and level forms and stratigraphic profiles were drawn and photographed for all excavations.

All artifacts recovered were taken to SCIAA where they were cleaned and stabilized. Analysis was conducted based on material type, function, and description (Smith et al. 2007: 8). All artifacts were cataloged and given permanent provenience numbers. National Park Service Standards and SCIAA curation standards were followed for curation of all of the artifacts recovered from Fort Motte. Artifacts were placed into acid-free bags which were labeled with permanent ink. Artifact bags were then organized in acid-free medium sized boxes. All record data was also included in these boxes (see Smith et al. 2007: 8 for further details).

After the 2005 excavation, the ammunition from Fort Motte was analyzed by Jim Legg (Legg in Smith et al. 2007). He individually examined lead shot for weight, diameter, type, condition, composition, and noted any other distinctive marks or features. Weight was measured to the nearest tenth of a gram. Diameter was measured to the nearest thousandth of an inch. Unfired balls were measured with calipers and fired balls were given projected measurements using the Sivilich formula (Sivilich 1996). Surface characteristics were observed with a handheld loupe with a power of 20X. Other characteristics of lead shot were also documented; for example, whether the balls had been fired or dropped, as well as the material into which the shot impacted (wood, sand, bone, etc).

Data gathered from the 2004-2006 archaeological survey and excavation at the Fort Motte battlefield site allowed researchers at SCIAA to revise the site's nomination to the National Register. This revised nomination was accepted by SCSHPO on November 17, 2006 (Smith et al. 2007: 8). Currently the Fort Motte Battlefield is listed on the NRHP and is recognized as having national significance (Smith et al. 2007: 2). A full description of the methods used and artifacts recovered between 2004 and 2006 can be found in the original Fort Motte site report (Smith et al. 2007).

CHAPTER 6

METHODOLOGY

6.1 RESEARCH METHODS

I focused my research for this thesis on primary historical documents such as reports from military personnel, military maps, manuals, and narrative accounts. These types of documents are especially useful in the analysis of conflict sites. Military manuals were written to prepare for likely scenarios and represent the ideal action in a given situation for both individuals and groups of soldiers. These documents can also help to "address observable features and support inferential interpretations of archaeological materials" (Bleed and Scott 2011: 48). I also examined secondary sources that discussed eighteenth century firearms, tactics, and the history of the Revolutionary War.

Much research about Fort Motte and the Siege in 1781 had already been conducted by Dr. Steven D. Smith. The original Fort Motte archaeological report (Smith et al. 2007) gives a thorough general history of the battlefield. My research in 2011-2013 focused more specifically on the involvement of riflemen in the American Revolution and a more detailed tactical analysis and firearms study of the mid-eighteenth century (Chapter 3). Libraries utilized for this research include:

- Thomas Cooper Library, University of South Carolina, Columbia
- Caroliniana Library, University of South Carolina, Columbia

- South Carolina State Library, Columbia
- Department of Archives and History, Columbia, South Carolina

6.2 ANALYTICAL METHODS

In my analysis of the Fort Motte site, I focus on the cultural variability and individual agency of military behavior evident at the tactical level. The majority of this evidence is seen in the close analysis of lead shot. My analysis of the lead shot recovered from Fort Motte looks at both material and spatial attributes. Therefore, this thesis utilized a weight-diameter analysis, a general surface analysis, and a spatial analysis of the lead shot recovered from Fort Motte.

It is asserted here that eighteenth century lead shot inherits surface and shape modifications that are the result of human behavior and reflect cultural variability. While all eighteenth century firearms utilized lead (or lead alloy) spherical shot, the size of lead shot used with different firearms shows remarkable distinction. Thus, I conducted a detailed weight/diameter analysis of the total lead shot recovered from Fort Motte as well as a weight/diameter analysis of the two major data sets indicating individual sharpshooting activity.

In addition to size, other surface characteristics of lead shot can be also used to determine the type of firearm that fired each ball. These include evidence of patching, rolling, rifling, windage, and impact. I have closely analyzed all of the lead shot included in the Fort Motte assemblage for surface characteristics as a part of the general assessment and lead shot analysis. The general surface examination of lead shot recovered during 2012 was conducted in an identical manner by Legg and myself to maintain cohesion with the previous analysis (Legg in Smith et al. 2007).

The context in which lead shot is found is also important in determining cultural affiliation because it is through context that one can analyze behavior. Therefore, a close and detailed analysis of the spatial distribution of lead shot recovered from Fort Motte was also conducted. The methods used in all of these analyses (weight/diameter, general surface, and spatial distribution) will be discussed below.

Weight/Diameter Analysis

The diameter of a lead ball is an especially valuable measurement for determining the type of firearm that was designed to fire it. Unfired lead shot was measured directly with calipers. This provided a very accurate diameter measurement. However, once a ball has been fired it loses its original spherical shape. Therefore, fired balls were not measured with calipers. Sivilich (1996) demonstrated that it is possible to determine a projected diameter of a lead ball based on its weight in grams. Sivilich's (1996) formula is based on the fact that the weight and diameter of lead shot are interrelated.[10]

Diameter in inches = 0.223204 x (Weight in grams)$^{1/3}$ (Sivilich 1996: 104)

Only lead shot can be measured in this way; pewter or lead alloy balls cannot be projected using this formula. Utilizing Sivilich's formula, Jim Legg has compiled a database of weights and projected diameters for lead shot between 1.0g and 34.4g

[10] To test this formula, archaeologists at the South Carolina Institute of Archaeology and Anthropology (SCIAA) measured unfired lead shot using calipers. The archaeologists then weighed the lead shot and used Sivilich's formula to determine a projected diameter for each ball. The caliper diameter was then compared to the projected diameter. The formula was found to be reliable within .001 inches. This method is very useful for determining the original diameter of lead shot.

(Legg, personal database). I calculated the weights of the Fort Motte lead shot and then used Legg's database of pre-calculated diameters to determine the projected diameter of all fired balls.

Sivilich's (1996; 2007) analysis of lead shot used diameter or projected diameter to identify the firearm that fired or would have been used to fire each ball. He was able to identify these firearms due to musket ball variation. I will expand this methodology to include all lead shot recovered from Fort Motte.

At the time of the American Revolution, two caliber sizes were used for smoothbore muskets: .69 caliber and .75 caliber. The French Charleville was a .69 caliber musket. It fired a ball that was about 0.63" in diameter. The British Land Pattern was a .75 caliber musket and fired a ball that was approximately 0.69" in diameter. Therefore, if one knows a "musket ball's diameter, one can estimate the bore of the gun it came from" (Sivilich 2007: 86).

Unlike musket balls, there was significant variation in the size of rifle balls (Peterson 2000; Sivilich 2007). Rifles were crafted alongside a unique "iron mold sized to his rifle bore by the gunsmith" (Lagemann and Manucy 1993: 17). All rifle balls were consistently much smaller in diameter than either of the musket balls of the time but otherwise differed from one another quite a bit. Eighteenth century rifle balls ranged from .30 caliber to .60 caliber. However, the most common range during the time of the Revolution was between .50 and .55 caliber (Legg in Smith et al. 2007: 55). As a result of the necessity to only use lead shot cast from the specific mold for each rifle, it is possible to look at the individual action of riflemen within the context of a small scale siege battle like Fort Motte. Individual action is evidenced by certain clusters of similar-sized rifle balls. In order to identify these clusters, I conducted a weight/diameter analysis with the Fort Motte rifle ball data.

According to Legg's (Legg in Smith et al. 2007) description of the 2004-2006 Fort Motte ammunition, I included both 'rifle balls' and 'probable rifle balls' in the weight/diameter analysis. 'Probable rifle balls' are defined as lead shot of rifle size and/or weight that do not have obvious evidence of patch marks or rifling. There is a chance that some of the 'probable rifle balls' may be large buckshot or small British carbine or trade gun balls. However, because buckshot weighs less (average between 2 and 4g) and carbine and trade gun balls weigh more (average between 18 and 21g) than the majority of rifle balls, I am confident that any overlap of ammunition type will not detract from the overall study, nor should it interfere with my analysis of distinct rifle ball clusters.

To ensure the integrity of the data presented, I have removed lead shot that have been cut. This is to maintain an accurate measurement of exact weight and projected diameter at the time of use directly before deposition. Nor will I include lead alloy rifle balls in my weight/diameter analysis. If I included such altered shot in my analysis, the distribution of lead shot would be skewed. Legg (in Smith et al. 2007) made some estimations of original weight in his analysis of the 2004-2006 data; however, I felt that for this study, it would be best to simply remove cut lead shot from consideration. Similarly, I will not include melted lead, as it is not possible to determine if the melted lead object was indeed lead shot or some other object.

Some of the lead shot in the assemblage were determined to have been ‘chewed,’ most likely by hogs (Figure 6.1). Chewing does not necessarily indicate a loss of mass as does cutting. Therefore, the chewed balls were entered into my database and were analyzed based on weight and projected diameter. However, the act of chewing inherently removes any surface characteristics such as rifling or patch marks on a ball. Therefore, chewed shot will be referred to as ‘probable rifle balls’ or ‘probable .69 caliber musket ball’, etc. based on size.

Figure 6.1 Photograph of hog chewed ball

Some of the lead shot also exhibited signs of rodent gnawing. Such gnawing may slowly diminish the mass of the ball, since the rodents actually ingest the lead. Slight rodent gnawing will not detract from the weight of a ball. However, considerable gnawing can affect the projected diameter. Thus, significantly gnawed lead shot was not included in my weight/diameter analysis of the ammunition recovered from Fort Motte.

Data from all lead shot (excluding the exceptions listed above) (n=134) recovered from Fort Motte between 2004 and 2012 was compiled into a single database, the analysis of which will be discussed in Chapter 7. To conduct the weight/diameter analysis, I organized data from recovered lead shot to create charts using Microsoft Excel to depict the weight/diameter distribution of lead shot. I made charts specifically for the Fort Motte assemblage as well as other Revolutionary War sites in South Carolina, including Fort Watson, Wadboo Plantation, Williamson's Plantation, Dunham's Bluff, Hickory Hill, Black Mingo, and Black Mingo North in order to compare these weight/diameter patterns.

Two types of charts were created to best demonstrate the lead shot data: 1) a scatterplot chart that shows the exact relationship between the weight and diameter of lead shot, and 2) a weight distribution chart that shows the quantity of lead shot recovered at each weight category (divided by the span of 1 gram). The weight distribution charts in this chapter use arbitrary 1g weight range divisions. These charts were then analyzed in terms of individual agency by looking for clusters of similar weight/diameter shot (specifically rifle balls). Therefore, it was necessary to compare the weight distribution charts to the scatterplot charts in order to avoid missing any clusters that were divided by these arbitrary weight categories.

Examples of the total lead shot distribution scatterplot chart based on weight/diameter and the weight distribution chart can be seen in Figure 6.2 and Figure 6.3, respectively. To illustrate this type of analysis, I have used ammunition data from the Revolutionary War site of Fort Watson. As will be discussed in Chapter 7, the Fort

Motte data represents an anomaly for Revolutionary War data and would therefore not be a good initial representation of a distribution of lead shot based on weight and diameter.

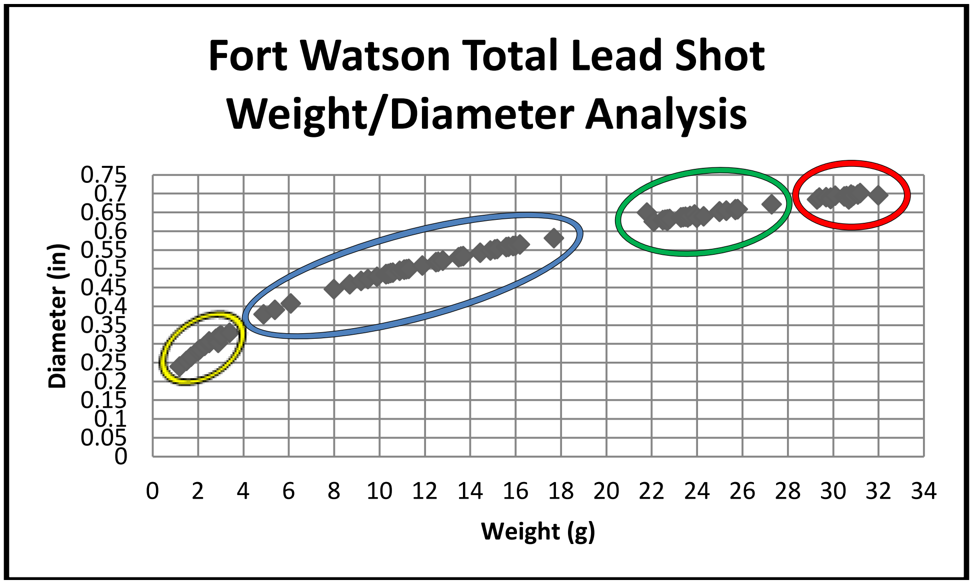

Figure 6.2 Fort Watson total lead shot weight/diameter analysis

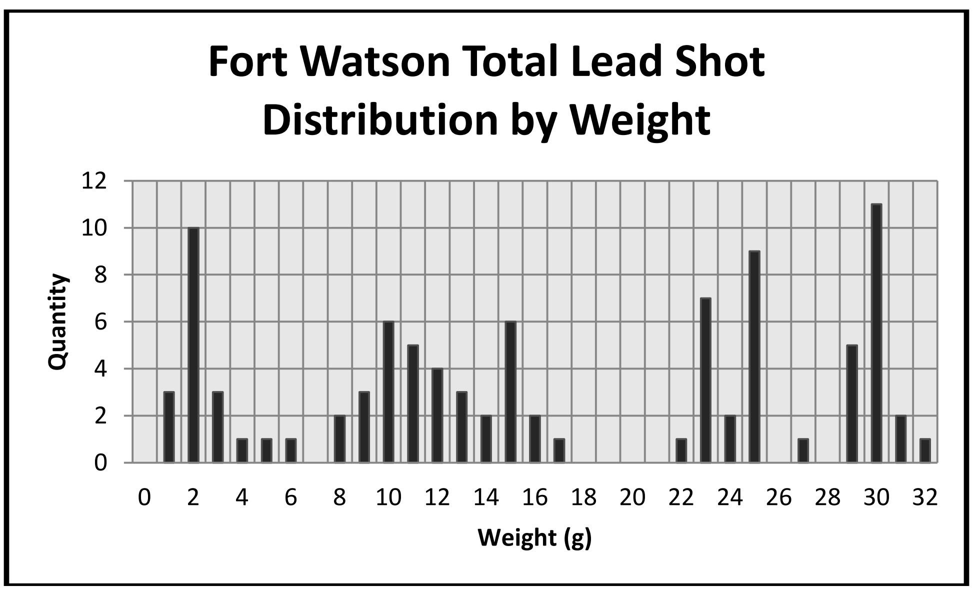

Figure 6.3 Fort Watson total lead shot distribution by weight

As Figure 6.2 shows, eighteenth century lead shot recovered from Fort Watson ranges in size from buckshot at the left to .75 caliber musket balls on the right. Certain groupings can be seen. These have been circled in Figure 6.2 and show, from left to right: buckshot circled in yellow, rifle balls circled in blue, .69 caliber balls circled in green, and .75 caliber balls circled in red. The standardization of both .69 and .75 caliber musket balls is clearly visible. Similarly, the wide range of rifle calibers is also evident.

The present investigation is innovative because it uses the data from a weight/diameter analysis to trace individual action. Within the rifle ball distribution depicted in Figure 6.2, certain clusters are visible. These can be identified as lead shot possibly fired from an individual firearm. The range of variability for lead shot fired from an individual rifle has been determined to be within a hundredth of an inch in diameter and a tenth of a gram in weight (Smith et al. 2007). Such clusters in the Fort Motte lead shot assemblage will be analyzed further in Chapter 7. The ranges of musket ball sizes/weights are not significant in this regard, since windage was needed for rapid musket fire. The range of rifle shot is much more meaningful to the study of individual rifles because of the need for a tight fit.

<u>General surface analysis</u>

Smith et al. (2007: 1-3) assert that the size is most important for an analysis of firearm typology based on lead shot. However, certain surface characteristics on lead shot, such as rifling or patching, can also be helpful for determining the type of firearm used. Surface characteristics were observed with a handheld loupe with a power of 20X.

Patching is indicative of a rifle ball. However, at times, rifle balls were not patched. Rifle balls can also be identified by direct evidence of rifling on the surface of the lead. Rifling can be seen as evenly spaced patch marks (for a patched ball) or scrapes (as is the case with an unpatched ball) (Legg in Smith et al. 2007). Rifling marks correspond to the lands inside the bore of a rifle (Figure 6.4).

Figure 6.4 Three distinct patched rifling marks

Additionally, some firearms were not actually rifled, but were used in the same manner as a rifle. Like rifled rifles, these “unrifled ‘rifles’” (Legg in Smith et al. 2007: I-5), or smoothbore rifles, would have had minimal windage; the ball would have fit very tightly in the bore. Smoothbore rifles would have been a less expensive and less accurate alternative to a rifled rifle. But, these firearms would have been much more accurate than any smoothbore musket with a loose fitting ball (Moller 1993: 180).

Evidence of smoothbore rifle fire can be seen on the surface of lead shot as a patched full barrel mark (Figure 6.5). Additionally, evidence of minimal windage can be seen as a full heavy barrel mark (See Figure 6.5). Such a mark indicates that a ball was fired from a firearm in which the bore diameter, or caliber, is equal or lesser than the diameter of the shot.

Evidence of the British production process can be seen in surface dimples on some unfired .75 caliber British musket balls (Figure 6.6). These dimples were created by large numbers of musket balls being rolled in a barrel to remove any inconsistencies, such as the mold seam and sprue, prior to distribution (Legg in Smith et al. 2007).

Figure 6.5 Full barrel patch mark as evidence of minimal windage in a 'smoothbore rifle'

Figure 6.6 Surface dimples caused by the rolling process seen on an unfired .75 caliber musket ball

Spatial distribution analysis

The Fort Motte lead shot data was organized by type according to the weight/diameter analysis and general surface analysis. The recovery location for each ball was then assessed. GPS location data was downloaded using GPS Pathfinder Office software. Using ESRI's ArcGIS Suite 10 software, Tamara Wilson created several spatial distributions maps (for example, maps of fired and unfired lead shot categorized by type). These maps were then analyzed, specifically in the context of identifying and discussing collective and individual behavior at Fort Motte. These maps will be discussed further in Chapter 7.

6.3 FIELD METHODS

Battlefields are generally comprised of relatively few artifacts in a widely dispersed area (Espenshade et al. 2002). Therefore, in order to adequately explore such a site archaeologically it is necessary to use methods of systematic metal detection in addition to more conventional unit excavation.

In May 2012, a team of archaeologists from SCIAA and a group of students from USC returned to Fort Motte and conducted another round of systematic metal detection. This field effort was conducted as a joint archaeological project with myself and Dr. Steven D. Smith. Our primary objectives were to recover additional lead shot for this thesis and to gather more data in order to plan future full-scale excavations at the site. Field work consisted primarily of systematic metal detection to recover lead shot. Unit excavation was conducted as a secondary means of collecting lead shot as well as a way to gather information about the fort, especially the moat and palisade surrounding the Motte house.

<u>Metal Detection Survey</u>

Systematic metal detection was conducted in two areas during the May 2012 field season: directly around Fort Motte (Metal Detection Areas 3, 5, and 6) and the site of the overseer's house (Metal Detection Area 12). Both of these areas had been previously detected in 2004-2006. The overseer's house site was covered in thick vegetation which inhibited metal detection previously. However, in May of 2012, the area had been recently plowed and planted with clover. This made metal detection of the area much more productive.

Balicki (2011) asserts that several different types of metal detectors should be employed at military sites and that several individuals should sweep the same area to increase the coverage of the site. Additionally, Babits (2001) suggests that detectorists should walk transects in one direction and then switch to walk perpendicular to the original transects. All of these suggestions were employed in the 2012 metal detection at Fort Motte. A variety of metal detectors were used. The primary detector used was a Tesoro, Inc. ® Cibola with a 9" coil. This detector offers good discrimination. The other detector used was the Garrett AT PRO.

Metal detection was conducted within designated block areas. These areas were marked with pin flags and the corners of these blocks were recorded with a total station electronic transit. Detectorists walked within each block along loose transects, sweeping the ground.[11] Transects were approximately 1.5 meters wide, which is the width of a single sweep of a metal detector (Smith et al. 2007). Detectorists followed plow rows to

[11] The initial use of this specific methodology of the block technique was utilized by Legg and Smith at the Camden Battlefield (Legg et al. 2005). The block technique, in turn, was a modification of metal detecting methodology utilized at the Little Bighorn Battlefield. Archaeological investigations of the Battle of Little Bighorn (Fox 1993; Scott and Fox 1987; Scott and McFeaters 2011) led to important advances in the field of conflict archaeology, specifically the creation of a highly organized and systematic methodology for the use of metal detector surveys. Several detectorists walked these areas in transects, sweeping the ground. The location of each find or 'hit' was recorded with a GPS. Archaeologists then recorded the exact location of individual artifacts and applied "modern firearms identification techniques" for their ammunition analysis (Scott and McFeaters 2011: 109).

maintain straight transects. Each designated detection area was separately covered by at least two trained detectorists.

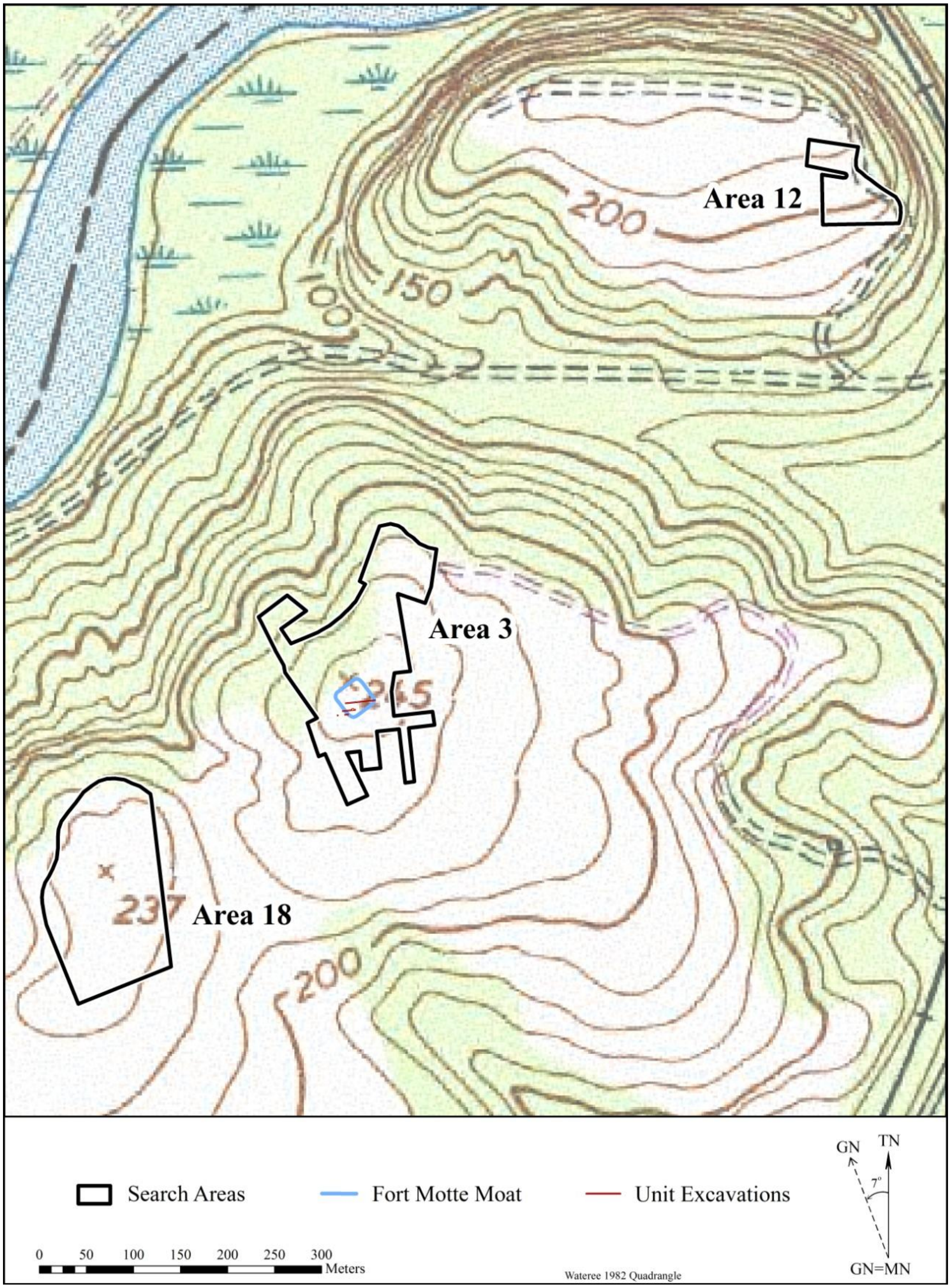

Figure 6.7 Map of expanded 2012 metal detection areas and unit excavation

Table 6.1 List of Fort Motte archaeological proveniences: 2005-2012 (modified from Smith et al. 2007: 38-9)

01	General surface collection artifacts in the immediate vicinity of Fort Motte
02	Mapped surface artifacts in the immediate vicinity of Fort Motte
03	Mapped metal detection artifacts from Collection Area 3 (including Fort Motte)
04	Mapped metal detection artifacts from Collection Area 4 (in the woods northeast of Fort Motte)
05	Mapped metal detection artifacts from Collection Area 5 (in the lower field west of Collection Area 6)
06	Mapped metal detection artifacts from Collection Area 6 (west of Collection Area 3)
07	Excavated artifacts from the 1m section of the southern ditch of Fort Motte
08	Excavated plow zone artifacts from the 2x2m unit overlying the brick chimney base just north of the DAR monument
09	Artifacts from the surface of the northern ditch of Fort Motte, exposed in the northern test trench
10	Mapped metal detection artifacts from Collection Area 10 (18th/early 19th century domestic site in the woods south of Fort Motte)
11	Mapped metal detection artifacts from Collection Area 11 (in the woods southeast of Fort Motte)
12	Mapped metal detection and surface artifacts from Collection Area 12 (18th century domestic site on the east end of the hill north-northeast of Fort Motte)
13	Artifacts collected from test trenches in the southern Fort Motte ditch
14	Surface collection artifacts collected by Landowner family in the immediate vicinity of Fort Motte
15	Mapped metal detection artifacts from Collection Area 15
16	Reserved for artifacts from Collection Area 16 (the site of the American battery) – No artifacts recovered to date
17	Excavated artifacts from 2012 unit excavation in the immediate vicinity of Fort Motte
18	Metal detection artifacts from Collection Area 18 (the possible American camp site west of Fort Motte)

When a metal object was detected, the detectorist immediately excavated the location with a shovel. Each find was dug to locate and retrieve the metal object. If other artifacts were discovered during this retrieval, they were also recovered. This soil was not screened due to the delicate nature of lead shot and other metal artifacts; however, the soil was hand sifted. After retrieving the metal object, the detectorist swept the location again. If another hit was detected, the process was repeated. If no hit was detected, the hole was backfilled and the detectorist moved on.

Collected artifacts were placed in a plastic bag. Each find was marked with a pin flag next to which bagged artifacts were left to await documentation. Another team member came behind the detectorists and recorded the location with either a total station electronic transit or a GPS unit, as is discussed below. The artifact was then given a unique bag number for field identification and recorded in the official bag list. As a general rule, metal artifacts dating later than the eighteenth century were not collected. The majority of such artifacts were late nineteenth century nails and railroad spikes (Smith et al. 2007: 9).

Figure 6.8 The author metal detecting in the expanded Area 3

A Sokkia® SCT6 Construction Total Station was used to map the exact location of metal detector finds in Metal Detection Areas 3, 5, and 6 directly around the fort. A Trimble GeoXH GeoExplorer 2008 Series GPS unit was used to record the location of each find in all other areas. A minimum of 120 positions were taken at each point. The accuracy of these recorded points is determined to be less than one meter.

Figure 6.9 Detectorist Spencer Barker marking a find in Area 3

This methodology allows for a clear understanding of the spatial distribution of the metal eighteenth century artifacts at Fort Motte. Such precise location data also provides the opportunity to discuss individual and group behavior of both American and British combatants in the context of the battle event. Several spatial distribution maps were created based on this data and will be discussed further in Chapter 7.

During our metal detection of the site, we experienced some issues and limitations. One of these was the prevalence of late nineteenth and early twentieth century railroad spikes in the open field surrounding the DAR monument. According to local land managers, railroad ties were used for fencing on the property when it was part of the Moye Plantation dairy farm (Smith et al. 2007). The railroad spikes caused much frustration among the detectorists. As discussed in Chapter 4, the site has been previously relic collected and looted. These spikes likely equally frustrated relic collectors in the past. This may be one reason why there is still a significant amount of lead shot and other battle related artifacts present at the site today. We did not collect railroad spikes. However, to keep from digging the same spikes, we temporarily gathered them in one location. After we finished metal detecting around the fort, we scattered the spikes across the field, hoping to deter future relic collectors.

Another limitation was the actual depth of soil penetration of the metal detectors at the site. Our team conducted systematic metal detection of the area laid out for unit excavation prior to any groundbreaking. However, metal objects and lead shot (n=6) were still recovered in our unit excavations. Thus, it was determined that, in practice at Fort Motte, the depth range of the metal detectors used was limited to 15-20cmbs.

Three detectorists, including the author, from SCIAA returned to the site for two days in November 2012. At this time, systematic metal detection was conducted in the area directly to the northeast of the Fort (part of Metal Detection Area 3). This area had been quite productive in past field seasons. Significantly, several .75 caliber musket balls were recovered here, leading to the hypothesis that this area may have been the location of the American sap (Smith et al. 2007: 57). The trained detectorists systematically walked this area in an overlapping and staggering fashion in order to recover the maximum amount of lead shot. The site around the Fort had recently been very finely plowed, with furrows less than two inches apart and approximately two inches deep. Previous metal detection in the area was conducted after the field had been plowed as well. However, previous plow furrows were closer to twelve inches apart and five to six inches deep. The finely plowed field encountered in November allowed for much more productive metal detection in the area.

Additionally, an area to the west of the Fort (Metal Detection Area 18) was systematically detected by two trained detectorists. This area was previously undetected by the SCIAA. Finds from both of these areas will be discussed in Chapter 7.

Unit excavation

Five 1 x 1 meter and twenty-four 1 x 2 meter units were laid out across the fort area. The units were mapped with a total station electronic transit to document their precise location. Units were laid out and excavated from east to west in order to encounter the moat and palisade, as well as any other fort related features (Figure 6.10).

Units were excavated down to feature level in order to photograph and record both domestic and battle-related aspects of the site. Archaeologists worked in teams of two: one digging and one screening. Plow zone soils were screened through ¼” wire mesh screen. Ten centimeters of feature level was also excavated. This soil was screened through ¼” wire mesh screen. Features located during excavation were carefully documented. Team archaeologists sketched scale drawings and photographed all features as well as the feature level of all units. Soil texture and Munsell soil color was assessed for feature level soils.

Recovered artifacts were organized separately by unit and placed in paper bags. All artifact bags were labeled with unit and level provenience information. A bag list as well as unit, level, and feature excavation forms were carefully maintained.

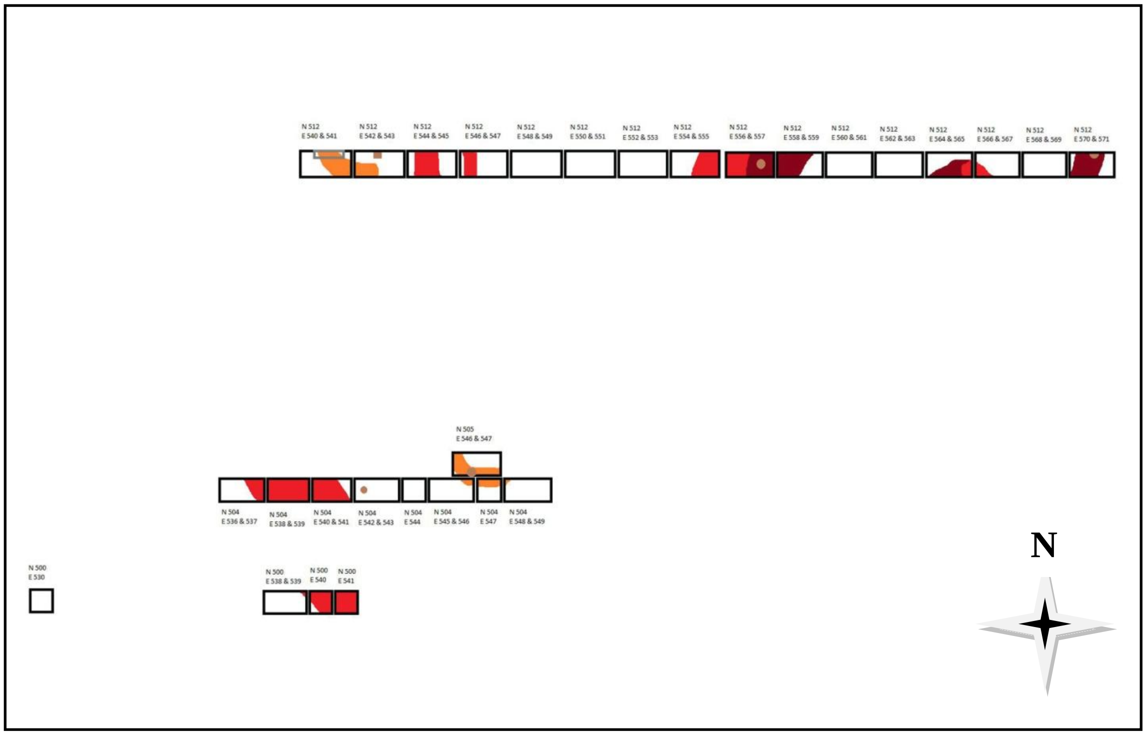

Figure 6.10 Layout of 2012 excavation units

Thousands of artifacts (n=4036) were recovered including lead shot, iron canister, historic glass and ceramics, nails, as well as a limited amount of prehistoric ceramics and lithic material. It is not the purpose of this thesis to detail all of the finds for the 2012 field season. A full site report for May and November 2012 work is currently being written by the SCIAA. This thesis focuses solely on ammunition collected from the Fort Motte site between 2004 and 2012.

Figure 6.11 Alison Baker and Jonathan Whitlatch excavating units

6.4 LABORATORY METHODS

All cultural material recovered was cleaned and stabilized or treated (when appropriate) according to material type. An artifact catalog was created to document material type, dimensions, function, and general artifact description. SCIAA curation standards were followed. All artifacts were placed in acid-free bags. These bags were labeled on the exterior with permanent ink. Labels included the site number, provenience, catalog number, quantity, and weight. A catalog description was also written on acid-free paper and inserted into each artifact bag. All artifact bags were packaged in one cubic foot acid-free cardboard boxes. The artifacts will be curated at the South Carolina Institute of Archaeology and Anthropology in Columbia, South Carolina.

CHAPTER 7

Analysis

Between 2004 and 2012 over two hundred (n=201) lead shot were recovered from all field investigations at Fort Motte (See Figure 7.1). Metal detector surveys conducted prior to 2012 located more than half of this total assemblage (n=108). The majority of the previously recovered lead shot was found on the hill around the fort and its side slopes. Prior to 2012, a few lead shot (n=3) were also recovered from the hill to the northeast of Fort Motte (including Metal Detection Area 12). One of these was interpreted as part of the overseer's house site (Area 12) where Henry Lee's Continentals camped during the siege of Fort Motte (Smith et al. 2007: 23).

Combined excavation and metal detection in May 2012 located additional lead shot (n=36). Recovery at this time focused on the area immediately surrounding Fort Motte (Metal Detection Areas 3, 5, and 6). However, these metal detection areas were expanded to include a larger section of the site, especially to the south of the fort. Additionally, a metal detection survey was again conducted in Area 12 (the overseer's house site). At this time, Area 12 had been plowed and newly planted. Therefore, significantly more lead shot (n=14) was recovered from this area.

The November 2012 metal detecting excursion recovered additional ammunition (n=57). Metal detection at this time focused on two different areas: 1) the area to the northeast of the fort defined as the 'sap line' based on previous finds of significant numbers of fired .75 cal. musket balls in an oval formation, and 2) the ridge to the southwest of Buckhead Hill (Metal Detection Area 18). Area 18 had not been systematically surveyed in previous visits to the site. Thus, the data gathered from both Area 12 and Area 18 has allowed a clearer understanding of the Siege of Fort Motte as well as the overall history of the site.

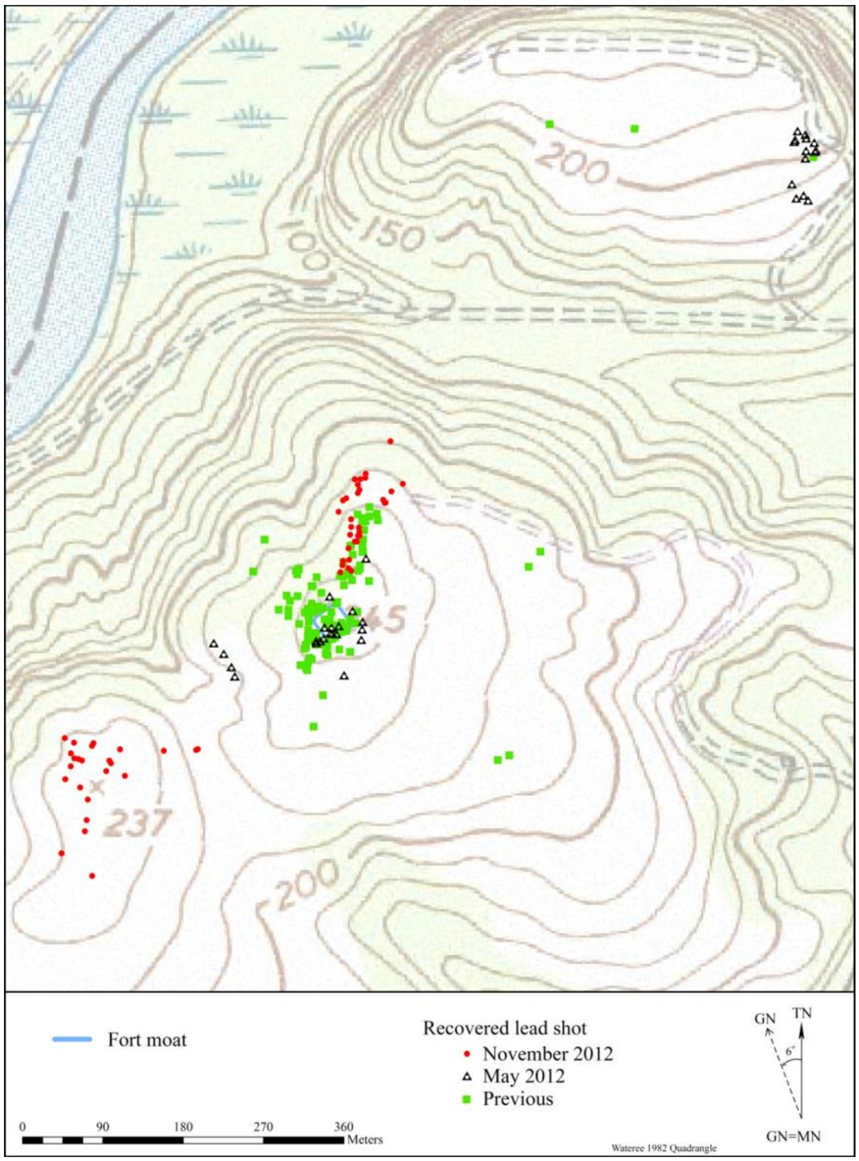

Figure 7.1 Total Lead Shot Recovered by Date

This thesis combines previously collected lead shot data with data collected from the May and November 2012 field excursions. The total assemblage of lead shot recovered from Fort Motte (n=201) was analyzed separately by location. In this chapter I will interpret the combined data based on close visual analysis, spatial distribution analysis, and weight/diameter analysis of all lead shot recovered from Fort Motte. I will first discuss major findings from the analysis of lead shot recovered in the immediate vicinity of the fort (Metal Detection Areas 3, 5, and 6) and will then briefly discuss findings regarding lead shot recovered from Area 12 and Area 18.

7.1 Fort Motte (Metal Detection Areas 3, 5, and 6)

The area in the immediate vicinity of Fort Motte is considered to be within two hundred meters of the fort moat in all directions and includes all of the 2005 and 2012 excavation units and trenches as well as Metal Detection Areas 3, 5, and 6. During the analysis of lead shot recovered from this area, two major anomalies were observed. First, there was an unusually large quantity (n=35) of 15g/.54 caliber rifle balls in the assemblage. Second, several (n=6) fired .75 caliber musket balls were observed to show distinct evidence of minimal windage. As will be discussed below, both of these anomalies indicate individual sharpshooting activity that can be analyzed in terms of agency.

These anomalies, based on lead shot data recovered prior to 2012, led to several hypotheses (Legg in Smith et al. 2007; Smith et al. 2007). First, it was thought that there was a significant percentage of lead shot that fell into one or two rifle caliber ranges, possibly indicating a rifleman sharpshooter. Second, a linear pattern of fired .75 caliber shot was noticed to the northeast of the fort moat. Three of these musket balls showed distinct evidence of minimal windage, suggesting they were fired from a musket of a smaller caliber size (likely a .69 caliber musket). Additionally, due to the predominance of British fire in that area, it was hypothesized that the American sap was probably dug to the northeast of the fort moat (Legg in Smith et al. 2007; Smith et al. 2007).

It is the aim of this thesis to clarify and reassess the aforementioned hypotheses and determine how these two anomalies show evidence of individual agency. To do so I will first briefly discuss the quantity and general distribution of all types of lead shot recovered from the immediate vicinity of Fort Motte and what this information can reveal about the Siege of Fort Motte. Second, I will focus specifically on an analysis of rifle balls and .75 caliber musket balls.

<u>General Lead Shot Assessment and Spatial Distribution Analysis</u>

A total of 151 lead shot were recovered from all Fort Motte excavations and Metal Detection Areas 3, 5, and 6. As seen in Table 7.1, these 151 lead shot were categorized based on visible surface characteristics such as evidence of rolling, patching, and rifling. The size and weight of the lead shot was also taken into consideration. This summary includes nine lead alloy balls, three cut balls, and six balls that have been heavily gnawed by rodents and are possibly underweight. Size and weight were estimated for these. All 151 lead shot from the area in the immediate vicinity of the fort were included in the following general typological assessment and spatial distribution analysis.

Table 7.1

Fort Motte (Areas 3, 5, and 6) Total Lead Shot Summary	
Ammunition Type	Quantity
Buckshot	12
Rifle balls	84
Trade gun / carbine balls	5
.65 or .67 caliber carbine or .65 caliber pistol balls	5
.69 caliber musket balls	7
.75 caliber musket balls	38
TOTAL	151

Several types of lead shot were recovered: buckshot (n=12), rifle balls (n=84), carbine/trade gun[12] balls (n=5), .65 or .67 caliber carbine or pistol balls (n=5), .69 caliber musket balls (n=7), and .75 caliber musket balls (n=38). The buckshot category includes nine fired and three unfired buckshot. The majority of the buckshot weighs between 2g and 4g. Fired buckshot was recovered around the fort moat as well as in the area to the northeast of the fort which was heavily detected (Figure 7.2). Unfired buckshot was only found outside of the fort moat (Figure 7.3). This indicates that the buckshot was fired as a part of the 'buck and ball' cartridges used by American forces besieging the fort.

The rifle ball category includes 73 fired rifle balls, five unfired rifle balls, and five rifle balls that were heavily chewed and were unable to be categorized as fired or unfired. Rifle balls have a wide dispersion of weights; however, the majority of the rifle balls in this category weigh between 6g and 16g. The majority of the fired rifle balls

[12] Carbines and trade guns fired lead shot of approximately the same size: between 18 and 21 grams.

were located in and directly around the fort moat area. As shown in Figure 7.2, all fired rifle balls from Areas 3, 5, and 6 were found within 120 meters of the fort moat.

Five fired rifle balls were recovered to the northeast of the fort along the area designated as the American sap line (See Figure 7.2). Several fired .75 caliber musket balls, identified as British fire (as will be discussed below), were recovered in this area, leading us to believe the main American assault came from this direction. The fact that there are fired rifle balls in this area may indicate that the British and Loyalist troops inside the fort had access to rifles. A closer analysis of these five rifle balls revealed that all five of the rifle balls vary in weight and diameter suggesting that they were all fired from different rifles.

Three of the five unfired rifle balls were found inside the fort moat (Figure 7.3). Another was found to the northeast of the fort and the final unfired rifle ball was recovered on the southeastern edge of the moat. All five unfired rifle balls are of various calibers.

The carbine/trade gun ball category includes three fired and two unfired balls. The three fired carbine/trade gun balls were all located along the 'sap line', indicating possible British fire (Figure 7.2). Both of the unfired carbine/trade gun balls were found within the fort moat, which also suggests British use of this type of firearm.

The .65 or .67 caliber carbine or pistol ball category includes three fired, one unfired, and one probable .65 or .67 caliber carbine or pistol ball that was heavily hog chewed and therefore unable to be categorized as either fired or unfired. One fired .65 or .67 caliber carbine or pistol ball was recovered on the edge of the fort moat, while the other two fired balls were recovered eighty meters northeast of the fort moat (Figure 7.2). The .69 caliber musket ball category includes six fired balls and one unfired ball. Three of the fired .69 caliber musket balls were recovered within and directly surrounding the fort moat and three were recovered between 80 and 100 meters to the northeast of the fort moat (Figure 7.2). The unfired .69 caliber musket ball was found just outside of the fort moat to the east of the fort. It is hypothesized that both sides had access to .69 caliber muskets during the siege.

The .75 caliber musket ball category includes 29 fired and seven unfired musket balls. The vast majority (n=24) of the fired .75 caliber musket balls were recovered along the area designated as the 'sap line'. However, three fired .75 caliber balls were recovered within 10 meters of the fort moat. It is uncertain whether these are the result of American or British/Loyalist fire. The unfired .75 caliber musket balls were all recovered inside or directly outside of the fort's moat and may be evidence of British occupation of the area and and/or British or American use of .75 caliber muskets during the siege of Fort Motte.

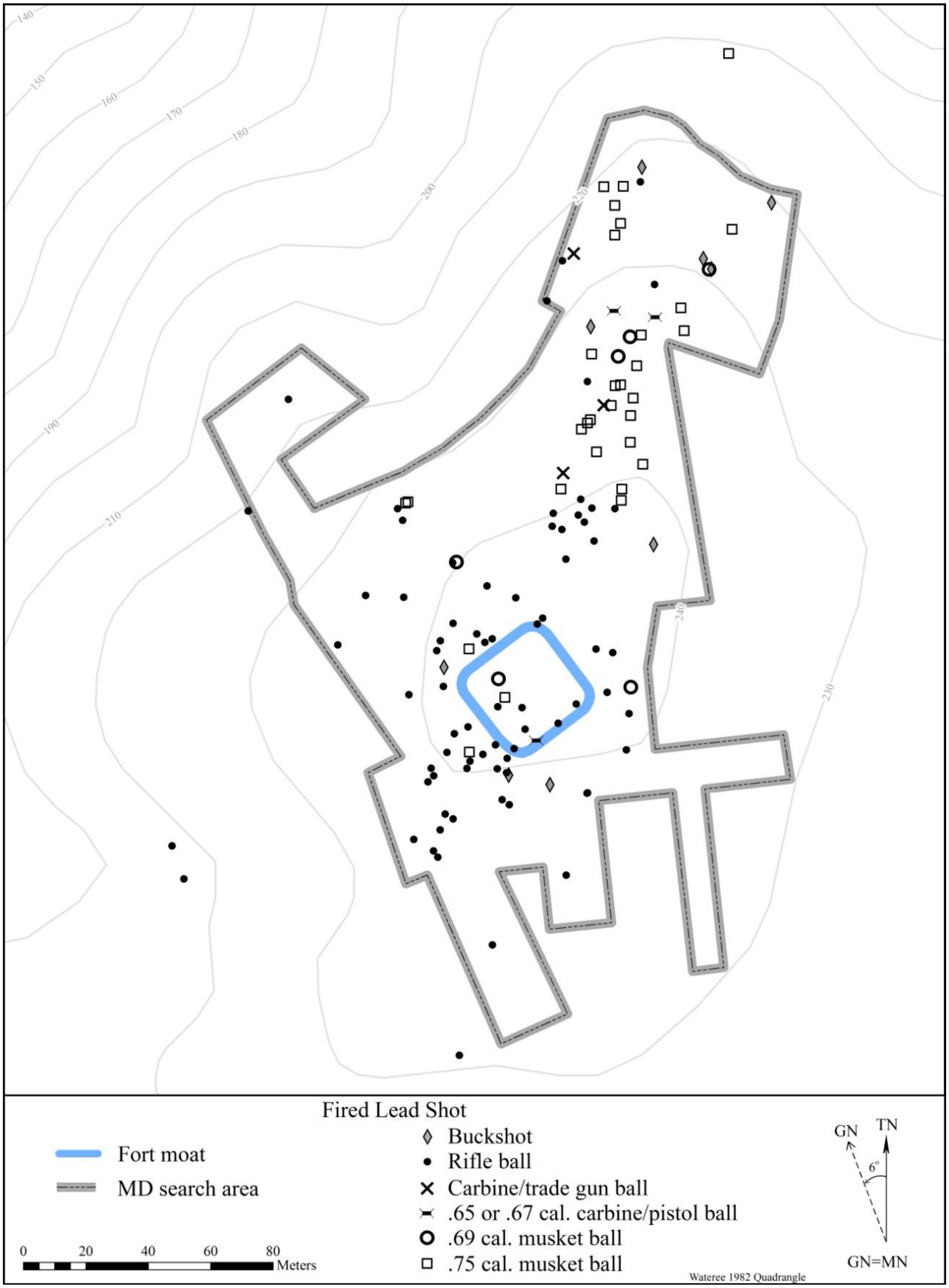

Figure 7.2 Fired Lead Shot by Type (Areas 3, 5, and 6)

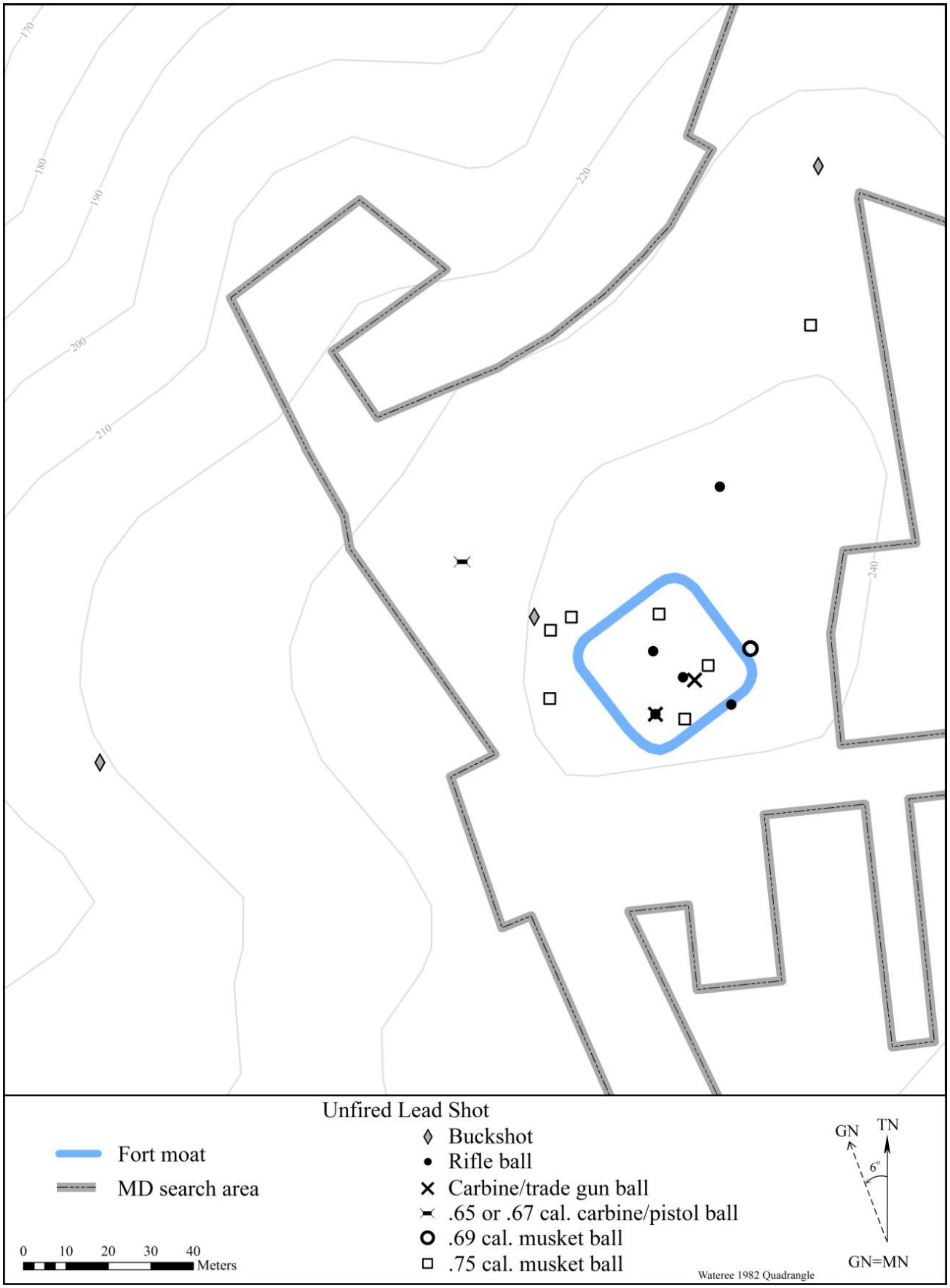

Figure 7.3 Unfired Lead Shot by Type (Areas 3, 5, and 6)

Total Weight/Diameter Analysis

All 151 lead shot that could be categorized by type were included in the spatial analysis discussed above. However, only 134 of these balls were included in the weight/diameter analysis (Table 7.2). Lead alloy balls, cut balls, and lead shot that were considered underweight due to rodent gnawing were not included in the weight/diameter analysis. Additionally, one modern buckshot was not included in either count.

Table 7.2

Fort Motte (Areas 3, 5, and 6) Total Lead Shot Included in Weight/Diameter Analysis	
Ammunition Type	Quantity
Buckshot	11
Rifle balls	73
Trade gun / carbine balls	5
.65 or .67 caliber carbine or .65 caliber pistol balls	3
.69 caliber musket balls	6
.75 caliber musket balls	36
TOTAL	134

Figure 7.4 shows the scatterplot chart for all of the lead shot included in the weight/diameter analysis and illustrates the close relationship between the weight and diameter of lead shot as a general trend line from buckshot on the far left to .75 caliber musket balls on the far right. This scatterplot also shows the two largest clusters of lead shot recovered from Fort Motte. First, the large quantity of rifle balls between 15g and 15.9g. Second, the large number of .75 caliber musket balls. The isolated cluster to the

right, between 28g and 32g, shows the high degree of standardization of the .75 caliber musket balls recovered from Fort Motte.

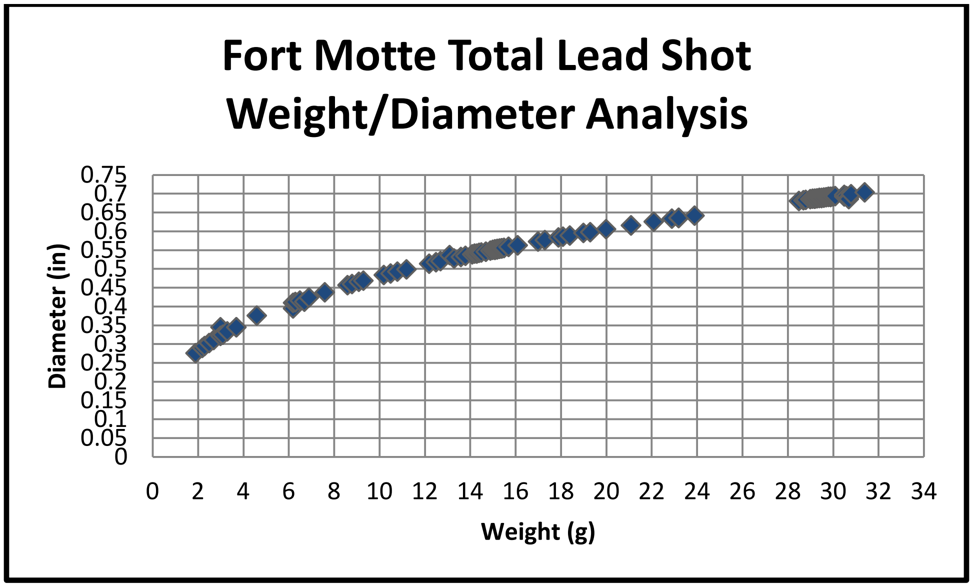

Figure 7.4 Fort Motte total lead shot weight/diameter analysis

Figure 7.5 shows the weight distribution chart for all of the Fort Motte lead shot included in the weight/diameter analysis. The two largest spikes in the weight/diameter analysis correspond with the two clusters discussed above. Both the clusters and the spikes correspond with the two anomalies discussed at the beginning of this chapter. The first spike represents the high number of 15.0g-15.9g lead shot that corresponds with the .54 caliber rifle ball anomaly. The second spike represents the high number of .75 caliber musket balls (between 28g and 31g).

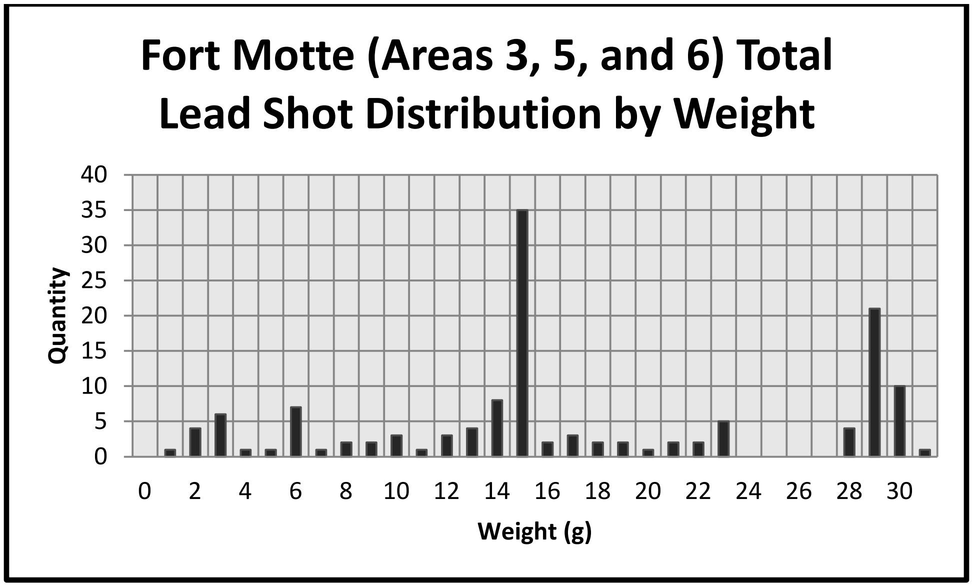

Figure 7.5 Fort Motte (Areas 3, 5, and 6) total lead shot distribution by weight

7.2 RIFLE BALL ANALYSIS

Based on the lead shot analysis conducted in 2007 (Smith et al. 2007) in addition to the current assessment, it is hypothesized that the 15g/.54 caliber cluster was created by the actions of one or two individuals. Clusters of rifle balls of very similar weights and diameters, within the context of a battle, may represent individual action. In order to assess the lead shot from the rifle ball category for evidence of other individual action, I conducted a close weight/diameter analysis solely of rifle balls to determine if other clusters could be seen. All 84 rifle balls listed in Table 7.1 were included in the spatial distribution analysis. However, only 73 of these were included in the weight/diameter analysis (Table 7.2). As is discussed above, eleven rifle balls were not included in the weight/diameter analysis due to certain pre- and post-depositional mutilations such as cutting or chewing.

In addition to the 15g/.54 caliber cluster, two other clusters were noticed within the Fort Motte rifle ball assemblage. Seven rifle balls were recovered with weights between 6.0g and 6.9g. Additionally, eight rifle balls were recovered with weights between 14.0g and 14.9g. However, these clusters are dwarfed by the large cluster of rifle balls between 15.0g and 15.9g (n=35). The 15g/.54 caliber cluster is clearly evident, circled in red, in the rifle ball scatterplot shown in Figure 7.6.

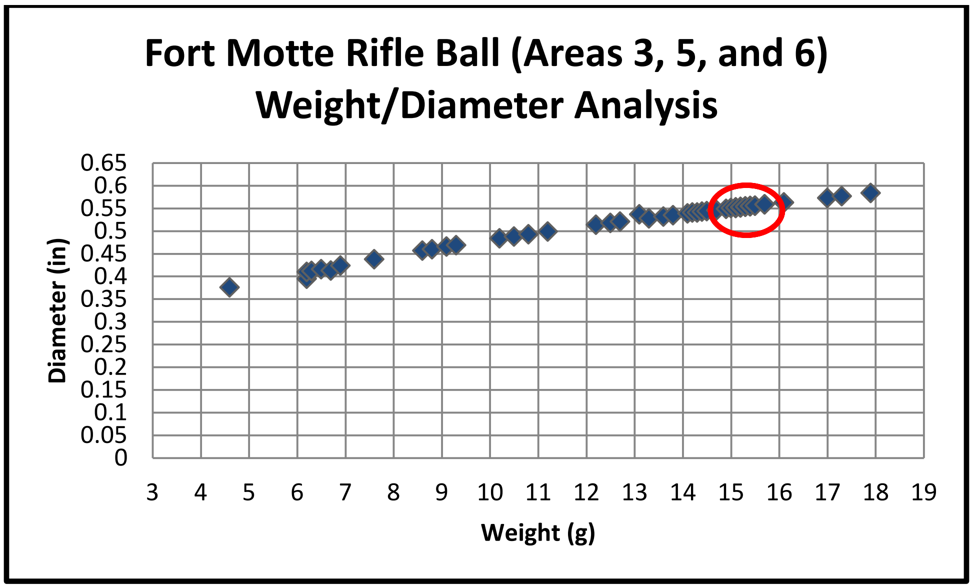

Figure 7.6 Fort Motte rifle ball (Areas 3, 5, and 6) weight/diameter analysis

The 15g/.54 caliber Rifle Ball Cluster: Evidence of Sharpshooters?

In order to examine the 15g/.54 caliber cluster, I isolated these rifle balls and analyzed them separately. I conducted a comparative spatial analysis of these rifle balls as well as a specific weight/diameter analysis. Figure 7.7 shows a spatial comparison of the 15g (.54 caliber) rifle balls to all other rifle balls recovered in the immediate vicinity of the fort. All of the .54 caliber rifle balls (n=35) were fired and the majority (n=27) showed evidence of wood impact. Only one had a sand impact and for seven of the .54

caliber rifle balls the impact material is unknown. The close proximity of the .54 caliber rifle balls to the fort and the fact that many of these balls struck wood indicates that they were fired at the fort. Based on a spatial analysis of the .54 caliber balls (Figure 7.7), the 15g/.54 caliber cluster is most likely the result of American fire during the siege of Fort Motte.

The majority of the .54 caliber rifle balls are within forty meters of the fort moat. Two of the .54 caliber balls are significantly farther from the fort (approximately 100 meters). It is asserted here that these distant rifle balls are the result of either fired balls that missed their mark or fired balls that ricocheted off the fort palisade or the Motte house. Such occurrences certainly explain the relatively small distance from the fort. It is hypothesized that rifle balls that missed their mark could travel up to 200-300 meters.

As a comparison, Figure 7.7 also includes all other calibers of rifle balls as a single category. The category encompassing all other rifle balls in the Fort Motte assemblage includes four unfired and thirty-one fired balls. Additionally, this category includes three rifle balls that were significantly hog chewed or deliberately mutilated or flattened. Such mutilation did not remove any mass from the lead shot; however, for these shot it was impossible to tell whether or not they had been fired. Of the thirty-one fired rifle balls in the category of all other rifle balls, five had a sand impact, twenty-two showed evidence of wood impact, and for the remaining four the type of material impacted was unable to be determined.

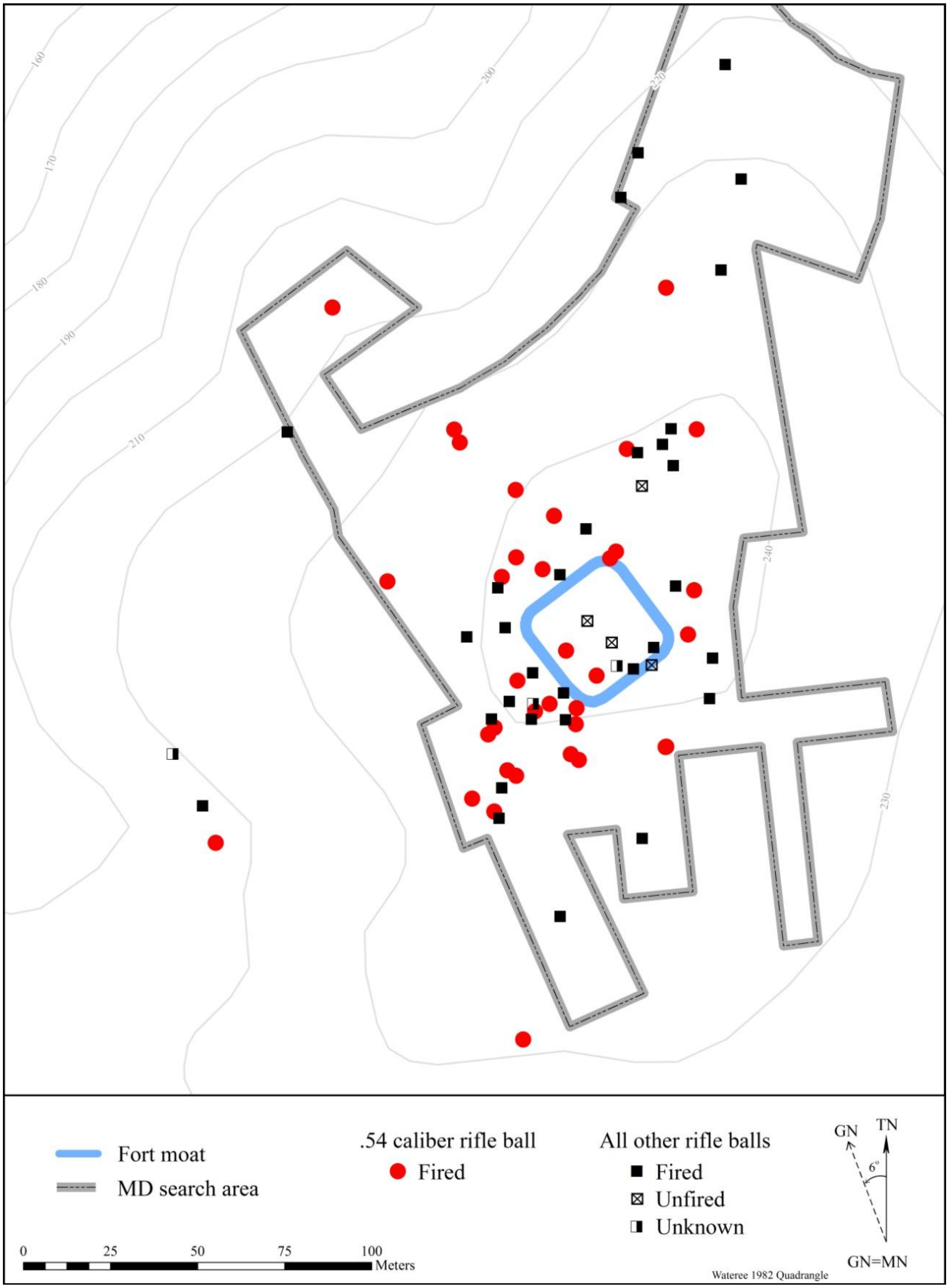

Figure 7.7 Spatial comparison of .54 caliber rifle balls to all other caliber rifle balls

Of the thirty-five rifle balls in the 15g/.55” cluster, the majority (n=28) of them weigh between 15.1g and 15.4g. Figure 7.8 shows the weight distribution within the 15g range. This chart depicts rifle balls from 14.9g to 16.1g to ensure a complete assessment of the cluster.

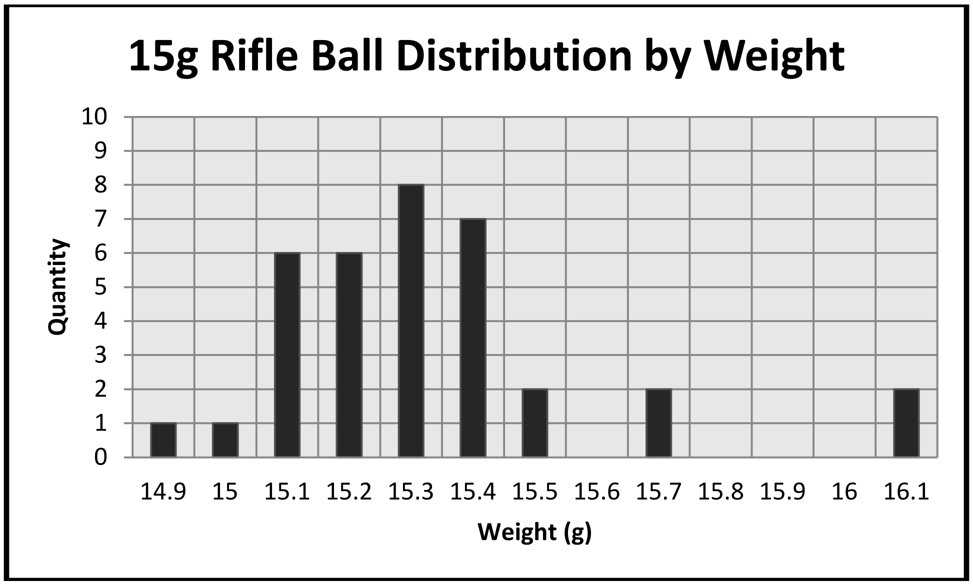

Figure 7.8 15g rifle ball distribution by weight

Within the 15g/.55” cluster, the lead shot was able to be divided into three sub-categories: rifled, smoothbore, and indeterminate. Six lead shot from the 15g cluster showed evidence of being fired from a rifled firearm, 15 showed evidence of being fired from a smoothbore firearm, and the 17 remaining balls were indeterminate. These categories represent the active presence of at least two .54 caliber firearms at Fort Motte; one firearm with rifling and the other without. The smoothbore balls show evidence of patching as well as minimal windage; therefore, they are considered to be fired from a rifle even though the firearm with which they were fired was not rifled. The firearm was treated as and utilized in the same manner as a rifled rifle. It shall hereafter be denoted as a smoothbore rifle.

When the sub-categories of rifled and smoothbore are taken into consideration using the weight/diameter analysis, it is shown that the weight range for rifled balls is 15.0g-15.3g, and the weight range for smoothbore balls is 15.1g-16.1g (see Figure 7.9). Due to the sample size for the balls that definitively show evidence of rifling (n=6) and the relatively wide weight range of the smoothbore balls, it is impossible to determine if two separate clusters could be identified within the 15g/.54 caliber cluster solely by means of a weight/diameter analysis.

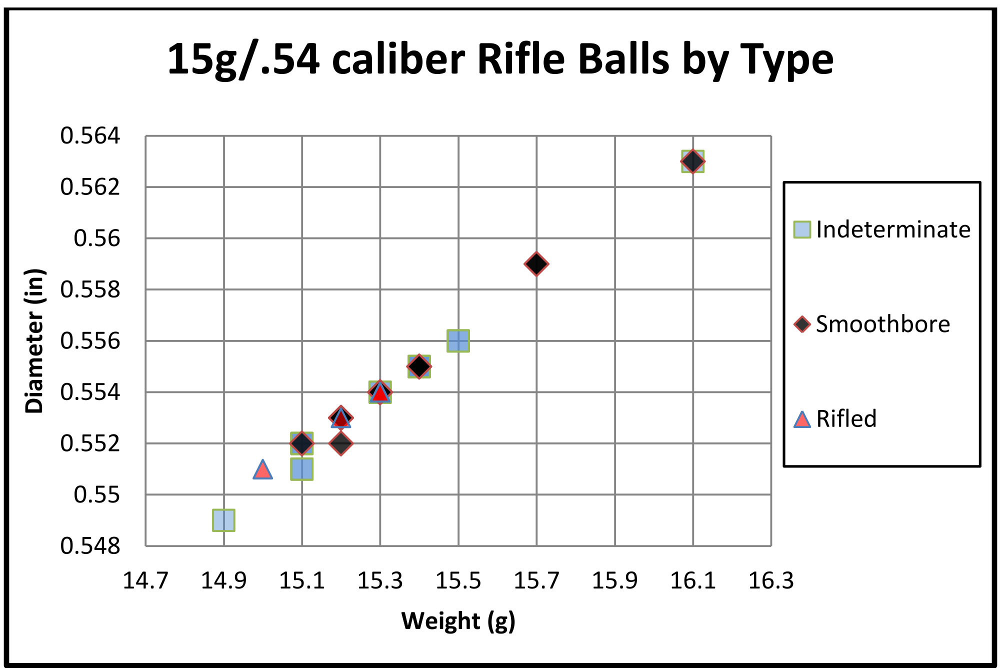

Figure 7.9 15g/.54 caliber rifle balls by type

A spatial analysis of the .54 caliber rifle balls by type (Figure 7.10) shows that both smoothbore and rifled firearms of this caliber were focused on the fort. Lead alloy shot, as well as cut lead shot with evidence of rifling, were included in this general spatial analysis.

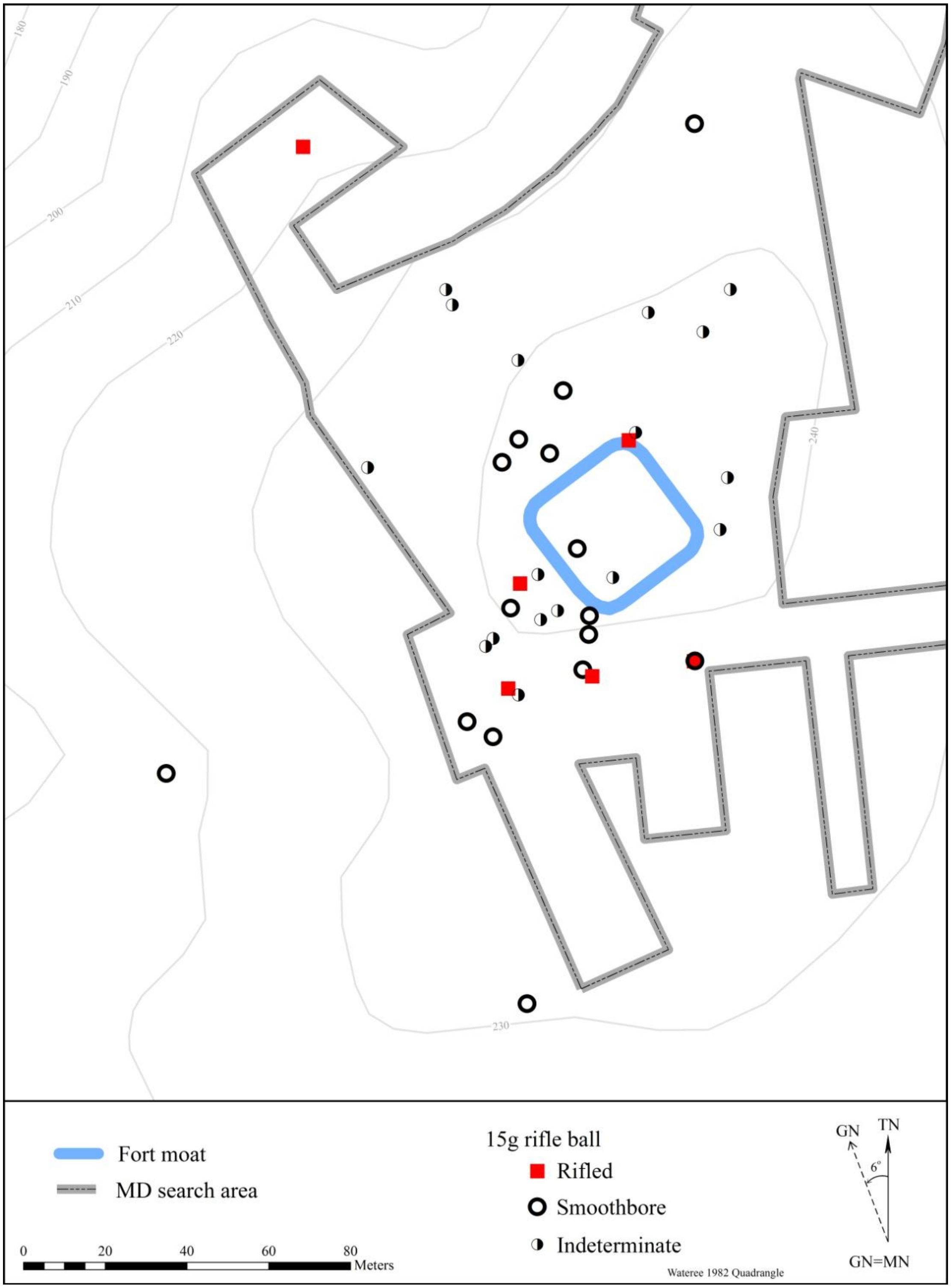

Figure 7.10 Spatial analysis of the 15g rifle balls by type

Comparison of Fort Motte .54 caliber Rifle Data with Other Revolutionary War Site Data

It has been stated that during the time of the American Revolution, the most common caliber for American rifles was approximately .54 caliber (Moller 1993: 178-180; Smith et al. 2007: 55). This would make 15g/.54 caliber the most common size of rifle balls at the time. It is possible that the 15g cluster seen at Fort Motte is only a material result of popular use of .54 caliber rifles. To test this possibility it is necessary to compare the lead shot data from Fort Motte with lead shot data from other Revolutionary War sites. This comparison is necessary to determine if the 'anomaly' seen in the Fort Motte data is truly an anomaly or if it is simply a representation of popular use of a specific caliber firearm.

In order to maintain an accurate cultural comparison, since the war in the northern colonies was fought in a different manner than the war in the south, the Fort Motte assemblage was only compared to data from other battlefields and military sites in South Carolina. I will compare the Fort Motte data to other sites where Francis Marion's riflemen were in action. These include Fort Watson, Dunham's Bluff, Wadboo Plantation, Black Mingo, and Black Mingo North. As discussed in Chapter 3, Fort Watson was constructed by the British in December 1780 and occupied through April 23, 1781.

The Dunham's Bluff site is associated with Francis Marion's camp at Snow's Island (Smith 2009: 12). It was occupied from August 1780 through March 1781 and the Battle of Snow's Island occurred sometime at the end of March 1781. This site was a permanent camp for Marion and his forces as well as American supporters and generally represents a more domestic and civilian culture.

The battle at Black Mingo took place on September 28, 1780. Marion dispersed a post of Loyalist militia at Dollard's Tavern along Black Mingo Creek (Smith et al. 2008: 39). This victory provided Marion's men with ammunition and muskets. The area across the river to the northwest of the Black Mingo battle site (Black Mingo North site) was also used as a Revolutionary War militia camp site. Smith et al. (2008: 45) have asserted that this camp site could be Marion's camp from November 1780 or it could be a Loyalist camp occupied during 1782.

The skirmish at Wadboo Plantation occurred on August 29, 1782. Marion and his troops had occupied the abandoned plantation as a temporary camp. British troops under the command of British Major Thomas Fraser attacked the plantation (Smith et al. 2008).

As discussed in Chapter 3, Francis Marion was not the only American partisan leader to utilize riflemen in combat. Therefore, Revolutionary War sites where Francis Marion was not present were also compared to the Fort Motte assemblage, including Williamson's Plantation and Hickory Hill. As described in Chapter 3, the battle at Williamson's Plantation, popularly known as the Battle of Huck's Defeat, took place on July 12, 1780. Additional information on these sites can be found in Scoggins et al. (2011); Smith et al. (2008); Smith et al. (2009).

All of the sites mentioned above were excavated by archaeologists from SCIAA. Jim Legg originally analyzed all the ammunition from each of these sites (Scoggins 2011; Smith et al. 2008; Smith 2009). After excavation, the lead shot was uniformly weighed, measured, and inspected for other characteristics. I examined the rifle ammunition data in order to determine if certain clusters of weight/diameter ranges could be seen, specifically focusing on the 15.0-15.9g weight range for a comparison with the Fort Motte data.

As in my weight/diameter analysis involving the Fort Motte data, I removed lead alloy and pewter rifle balls as well as cut shot from this analysis. First, I will individually analyze the lead shot data from each site and second, I will combine this data in order to more effectively compare it to the Fort Motte rifle ball anomaly.

The rifle balls in the Fort Watson assemblage (n=38) showed evidence of four small clusters[13] (see Figure 7.11). The greatest number of rifle balls weighed between 10.0g and 10.9g (n=6) and between 15.0 and 15.9g (n=6). Additionally, five rifle balls were documented within the 11.0g - 11.9g range and four rifle balls weighed between 12.0g and 12.5g (Figure 7.11).

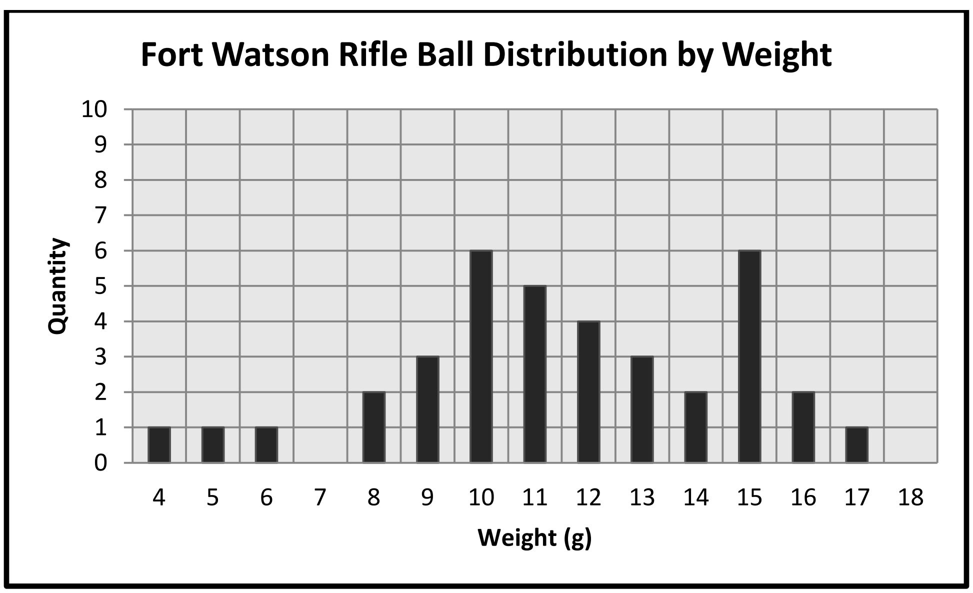

Figure 7.11 Fort Watson rifle ball distribution by weight

[13] This evidence corresponds to the historical account of three to four riflemen sharpshooters firing from Maham's tower (Ferguson 1973; MacKay 1781).

The Williamson's Plantation data yielded thirty-seven rifle balls. In this case, the largest cluster (n=5) is seen in the 15.0-15.9g weight range. However, Figure 7.12 shows that the 4.0-4.9g, 5.0-5.9g, and 7.0-7.9g weight ranges each include four rifle balls. Therefore, it appears that the .54 caliber rifle did not have a dominant role in the military action at this site.

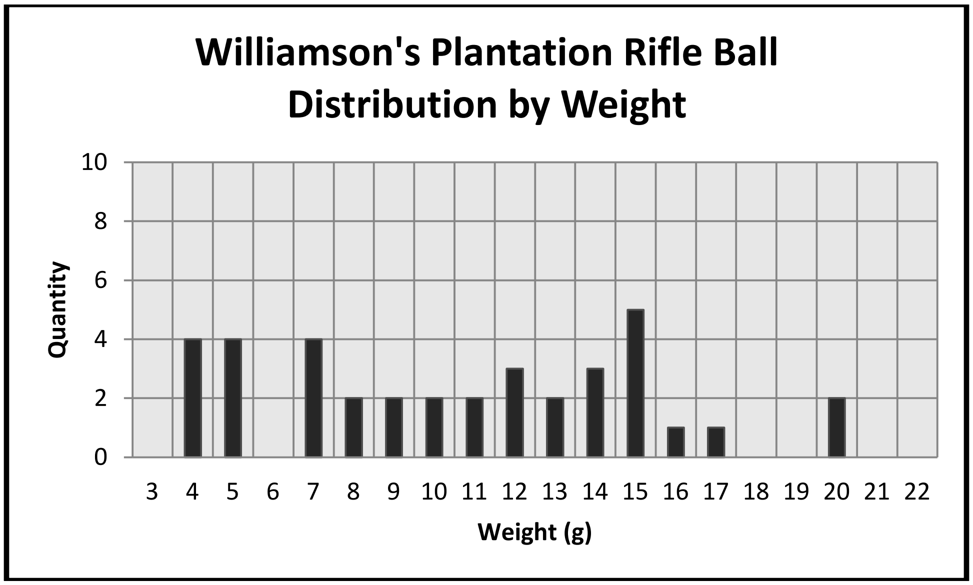

Figure 7.12 Williamson's Plantation rifle ball distribution by weight

The majority of the Wadboo Plantation site ammunition are rifle balls (n=47), "suggestive of Marion's riflemen" (Smith 2008: 15). The weight range between 15.0g-15.9g is populated with seven rifle balls (Figure 7.13). The Wadboo assemblage also shows a strong cluster between 5.0g and 5.9g (n=8).

Black Mingo yielded twenty rifle balls for this analysis. Similar to the Wadboo Plantation assemblage, the Black Mingo assemblage does not show 15g/.54 caliber as the most common size (Figure 7.14). The greatest quantity of rifle balls instead were clustered around 13.0g. A total of five rifle balls weigh between 13.0g and 13.9g. The

15.0g-15.9g weight range was the second most populated (n=3); however, this is not especially significant due to the small sample size.

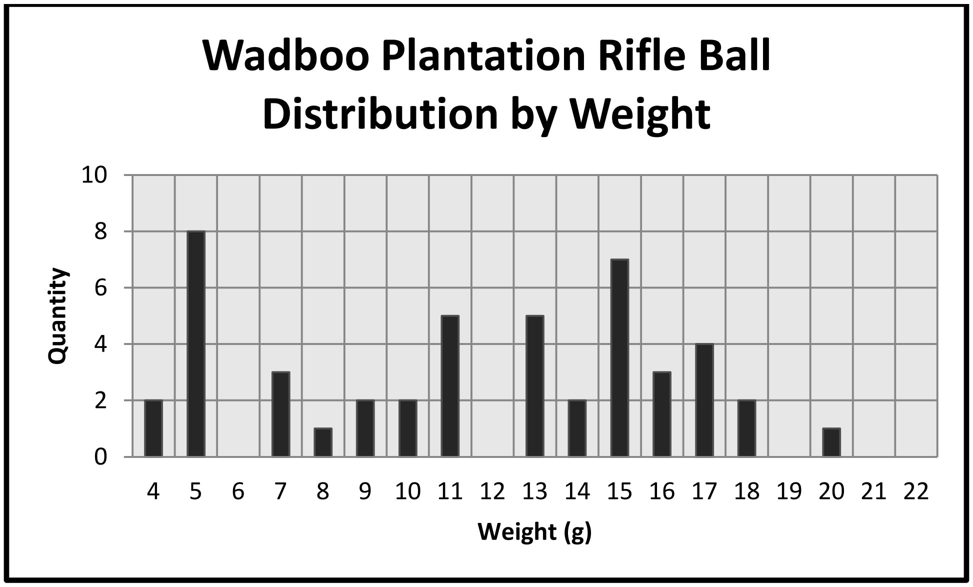

Figure 7.13 Wadboo Plantation rifle ball distribution by weight

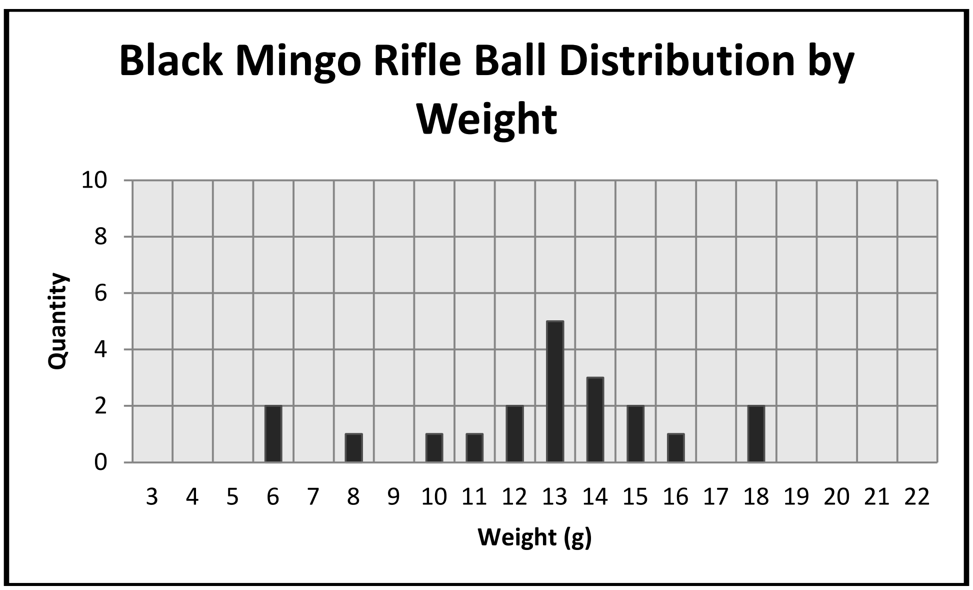

Figure 7.14 Black Mingo rifle ball distribution by weight

The lead shot from Dunham's Bluff also yielded 20 rifle balls for this analysis; however, no major clusters were observed. Likewise the 13 rifle balls analyzed from

Hickory Hill and the eight rifle balls analyzed from Black Mingo North showed no significant clusters. This is likely due to the small sample size of lead shot collected from each of these sites.

In order to compare the Fort Motte assemblage to a much larger sample size, an amalgamation of lead shot data (Table 7.3) was created, utilizing the totality of rifle ball data gathered from these seven sites (Figure 7.15). This amalgamation includes 183 rifle balls. The combined data was used to compare general trends in the use of rifled firearms and lead shot during the time of the American Revolution to the anomaly seen at Fort Motte.

Figure 7.15 shows that for the combined data from the seven aforementioned sites, the 15.0-15.9g weight range is indeed the most populated (n=26). It is significant that while the 15g weight range is the most abundant in this amalgamation of lead shot data, the Fort Motte data from this same range is higher still (n=35). This fact demands attention and suggests that the anomaly at Fort Motte cannot be explained simply by a general trend in rifle calibers at the time of the American Revolution. The Fort Motte .54 caliber rifle data most likely represents specific sharpshooting behavior of at least two individuals during the Siege of Fort Motte.

Table 7.3 Amalgamation of Comparison Site Data

Weight (g)	Wadboo Plantation	Williamson's Plantation	Hickory Hill	Black Mingo	Black Mingo North	Dunham's Bluff	Fort Watson	TOTAL
3	0	0	2	0	0	0	0	**2**
4	2	4	0	0	0	3	1	**10**
5	8	4	1	0	0	0	1	**14**
6	0	0	0	2	0	0	1	**3**
7	3	4	1	0	0	0	0	**8**
8	1	2	0	1	0	0	2	**6**
9	2	2	0	0	2	2	3	**11**
10	2	2	1	1	0	0	6	**12**
11	5	2	0	1	1	0	5	**14**
12	0	3	0	2	1	2	4	**12**
13	5	2	1	5	0	2	3	**18**
14	2	3	1	3	2	2	2	**15**
15	7	5	2	2	1	3	6	**26**
16	3	1	1	1	0	0	2	**8**
17	4	1	1	0	1	3	1	**11**
18	2	0	2	2	0	2	0	**8**
19	0	0	0	0	0	1	0	**1**
20	1	2	0	0	0	0	0	**3**
21	0	0	0	0	0	0	0	**0**
22	0	0	0	0	0	0	1	**1**
TOTAL	**47**	**37**	**13**	**20**	**8**	**20**	**38**	**183**

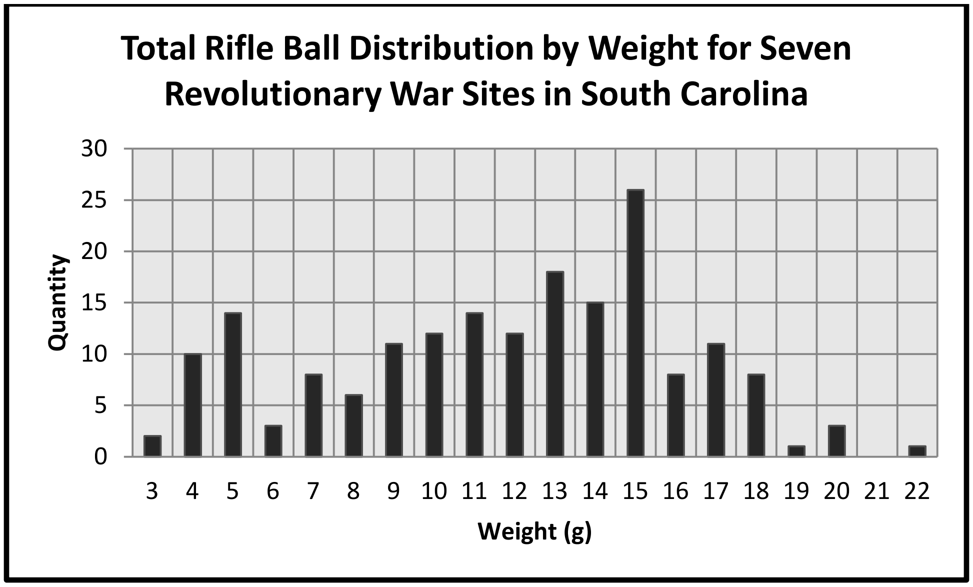

Figure 7.15 Total rifle ball distribution by weight for seven Revolutionary War sites in South Carolina

7.3 .75 CALIBER MUSKET BALL ANALYSIS

The second largest spike in the Fort Motte data is caused by the numerous (n=34) .75 caliber musket balls in the lead shot assemblage. Of these thirty-four musket balls, five were unfired. Additionally, three of the unfired .75 caliber musket balls showed evidence of being rolled (Legg in Smith et al. 2007: I-6). As discussed in Chapter 3, rolled balls are indicative of the British manufacturing process (Legg et al. 2005; Legg in Smith et al. 2007: I-6). In the Fort Motte assemblage only one .75 caliber musket ball showed distinct evidence of non-British ammunition production and thus was identified as atypical. Figure 7.16 shows that both the mold seam and the sprue cut are visible on the atypical ball. This musket ball was unfired and recovered within the fort moat. This evidence is suggestive of a Loyalist ball.

Figure 7.16 Atypical .75 caliber musket ball

Twenty-seven of the fired .75 caliber musket balls showed evidence of normal windage. Five of these .75 caliber musket balls had a wood impact. As Figure 7.17 shows, all five were recovered inside the fort moat or in the immediate vicinity of the fort moat area. Therefore, these five balls may be evidence of American use of .75 caliber musket(s). However, the majority of the fired .75 caliber musket balls showing evidence of normal windage (n=22) had a sand impact. All but three of the sand impacted .75 caliber balls were recovered in a linear formation to the northeast of the fort (Figure 7.17). The fact that the majority of the fired .75 caliber musket balls with normal windage show evidence of a sand impact, taken in conjunction with the spatial distribution data, indicates that the majority of fired .75 caliber shot recovered at Fort Motte can be understood as British fire on the American sap.

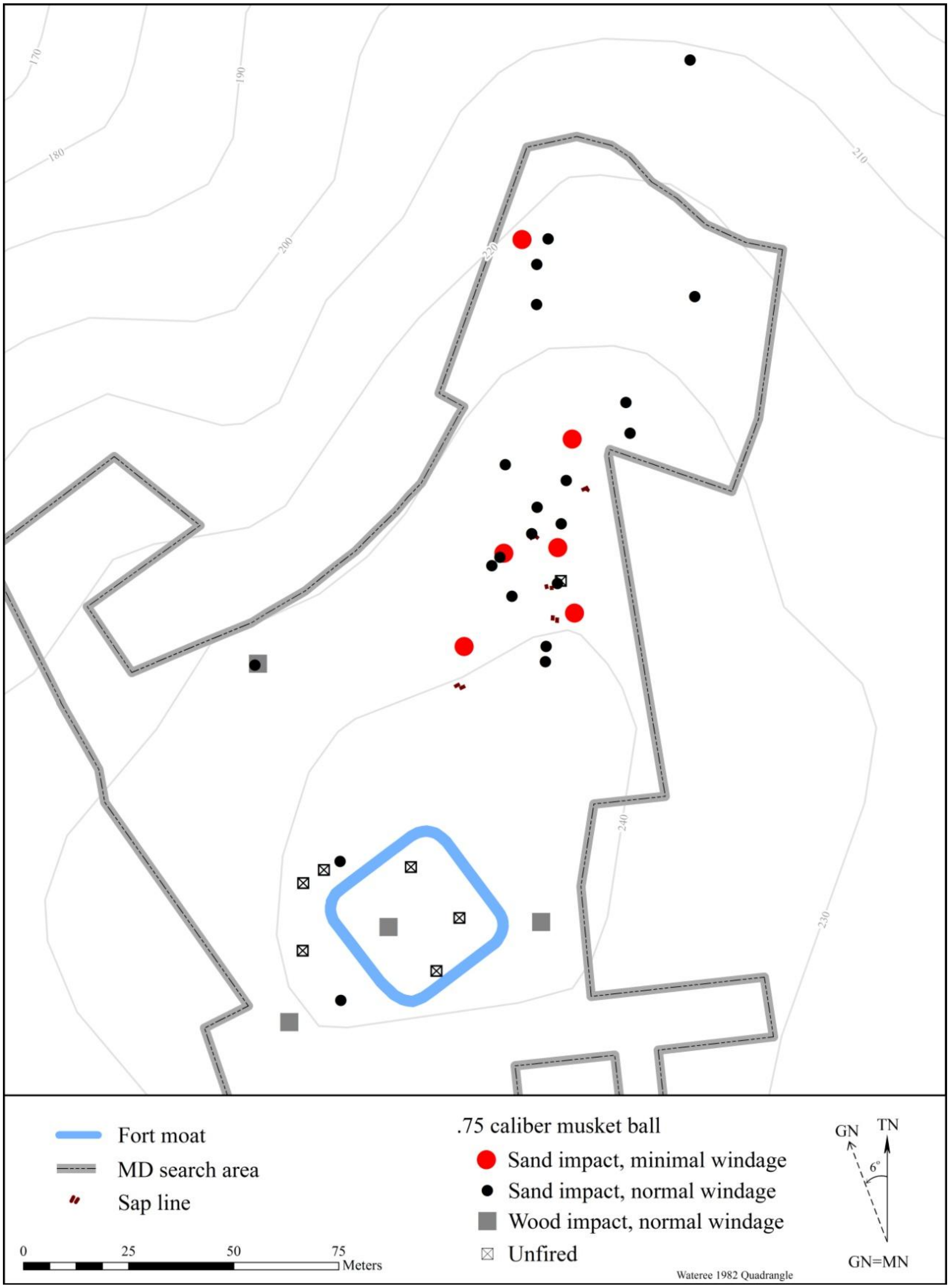

Figure 7.17 Spatial analysis of .75 caliber musket balls

In the summer of 2013, as this thesis was being written, archaeologists from SCIAA returned to Fort Motte and dug five trenches perpendicular to the linear formation of fired .75 caliber musket balls in an attempt to locate the sap. Portions of the sap were located and can be seen in Figure 7.17 as sets of dark red parallel rectangular points. Based on spatial analysis of these points, the sap appears to have been dug in a zig-zag pattern, with at least two extreme turns.

<u>.75 caliber Musket Balls with Evidence of Minimal Windage: Evidence of Sharpshooting?</u>

In addition to the normal windage .75 caliber musket balls, a total of six .75 caliber musket balls were recovered with a heavy barrel mark, which is indicative of minimal windage (Figure 7.18 and Figure 7.19). These six musket balls account for the second anomaly within the Fort Motte assemblage. All six minimal windage .75 caliber musket balls have a sand impact and were located along the sap line. These are represented as large red circular points in Figure 7.17. It is hypothesized that these balls were rammed into and fired from a .69 caliber musket in an attempt to achieve greater accuracy and distance. Because they were recovered along the sap line, the shooter was likely aiming at the American diggers in an attempt to impede their assault on the fort.

In order to more closely analyze the British .75 caliber musket balls recovered from Fort Motte, a weight/diameter analysis of the .75 caliber shot was conducted. This analysis revealed only one major outlier from the group; this was the musket ball defined as atypical (Figure 7.20). However, three other .75 caliber musket balls were also slightly off of the main trend line (slightly heavier than typical for their size).

Figure 7.18 A .75 caliber musket ball with minimal windage

Figure 7.19 Very heavy barrel mark visible on a .75 caliber musket ball

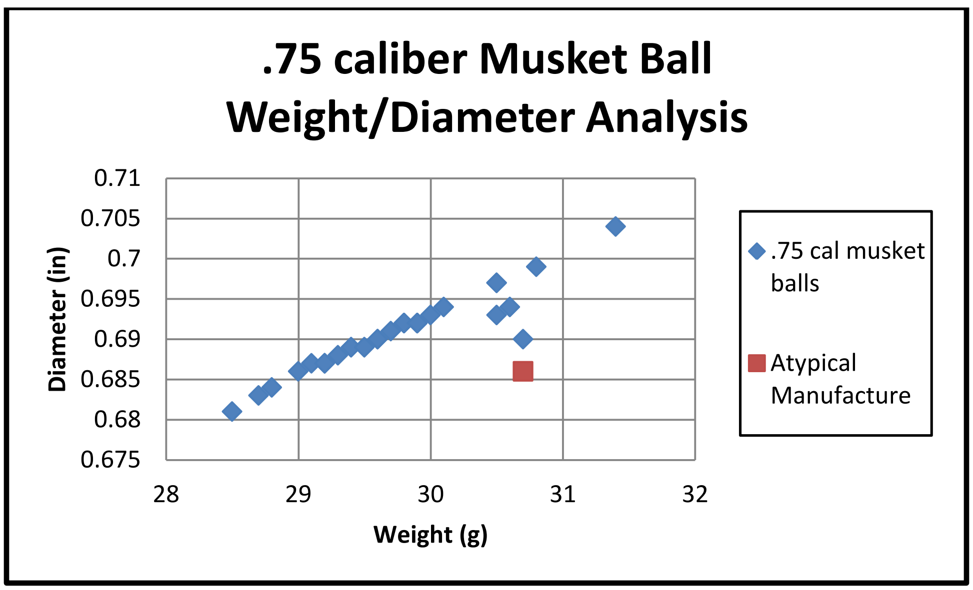

Figure 7.20 .75 caliber musket ball weight/diameter analysis

I then added data highlighting the rolled balls (Figure 7.21), supposing that these would probably fall along the main trend line, and that perhaps the slight outliers might be indicative of atypical manufacture. However, as shown in Figure 7.21, two of the three rolled musket balls were slight outliers from the group. These outliers are only slightly heavier for their size, however. Thus, the difference between the main trend line and the slight outliers may be able to be understood as normal variability for British .75 caliber musket balls.

Additionally, data was added highlighting the six .75 caliber musket balls with minimal windage (Figure 7.21). All six of these musket balls fell along the major trend line for .75 caliber musket balls. Therefore, the individual firing these balls was very probably utilizing British manufactured .75 caliber shot and was almost certainly a British soldier or a Loyalist.

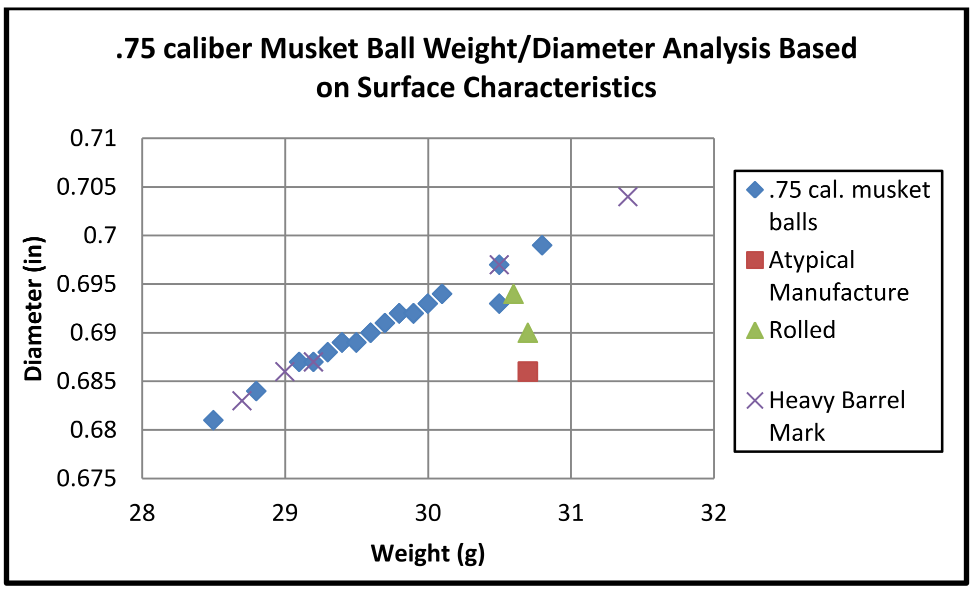

Figure 7.21 .75 caliber musket ball weight/diameter analysis based on surface characteristics

7.3 OTHER EVIDENCE OF INDIVIDUAL ACTION

While I focused my analysis on the two major anomalies discussed above, other evidence of individual action was observed during my research. Two of these will be discussed below: 1) ramrod marks on fired lead balls, and 2) the distribution of iron canister shot.

Ramrod Marks

During the lead shot analysis two sets of distinctive ramrod marks were found. These offer comparative data for the analysis of clusters and their interpretation as individual action because each set was almost certainly fired from the same firearm and likely by the same individual. The first distinctive ramrod mark is an indentation that has the appearance of a capital H (Figure 7.22 and 7.23). This 'H' mark is present on two rifle balls, both from the 15g/.54 caliber cluster. Both of these rifle balls were indeterminate for rifling or smoothbore barrel marks. Both have a distinct uncut or roughly cut sprue. Both H mark balls were recovered to the southwest of the fort less than twenty meters apart (Figure 7.24). During a close inspection and comparison of these two rifle balls, it was determined that the mark on 03.009.001 is larger than the mark on 03.027.001. The difference in size is likely due to the distortion of the ball during the firing process.

Figure 7.22 H Ramrod Mark on 03.009.001

Figure 7.23 H Ramrod Mark on 03.027.001

A rough ramrod mark was also found on two carbine or trade gun size balls. Both were composed of lead, one weighing 19.3g and the other weighing 20.0g. This mark may have been produced by a dirty or rusted ramrod, although these hypotheses are only speculative. Because of the almost identical ramrod marks on these two balls as well as their similar weights, it is highly probable that they were fired from the same carbine or trade gun, likely by the same individual. These balls were recovered twenty-five meters apart and approximately seventy meters to the northeast of the fort (see Figure 7.24). This location lies along the American sap line. Therefore, it is possible that the shooter was British or Loyalist and was firing at the American sap. This data understood in conjunction with the spatial distribution of unfired carbine/trade gun balls discussed previously (Figure 7.3), indicates that the British utilized at least one carbine or trade gun during the siege of Fort Motte.

Iron Canister

Although iron canister clearly does not fit into the category of lead shot, it is appropriate to discuss such artifacts and analyze them here as they are the only other type of ammunition recovered from the Fort Motte battlefield. Despite the active presence of an American artillery piece during the Battle of Fort Motte, only five iron canister balls have been recovered archaeologically. The relative lack of canister is undoubtedly due to the active presence of relic collectors at the site since the eighteenth century. Two canister shot were found in previous metal detection work (Area 3 and Area 6), one was found during the May 2012 excavation in Unit 23 (N512

E558 & 559), one was recovered in November 2012 metal detection in the area of the sap line (Area 3), and one found as this thesis was being written (2013 excavation within the fort). Figure 7.25 shows the GPS locations of recovered canister shot in relation to a 1948 photograph.

Although the exact position of the artillery mound cannot be seen on the present landscape, aerial photographs of the area from 1937 and 1948 clearly show the mound area approximately 200 meters east of Fort Motte. The presence of the artillery mound on the historic landscape as well as the recovery of five iron canister shot from the Fort Motte battlefield can be viewed as evidence for the individual action and leadership of Captain Ebenezer Finley, the American artillery officer during the siege.

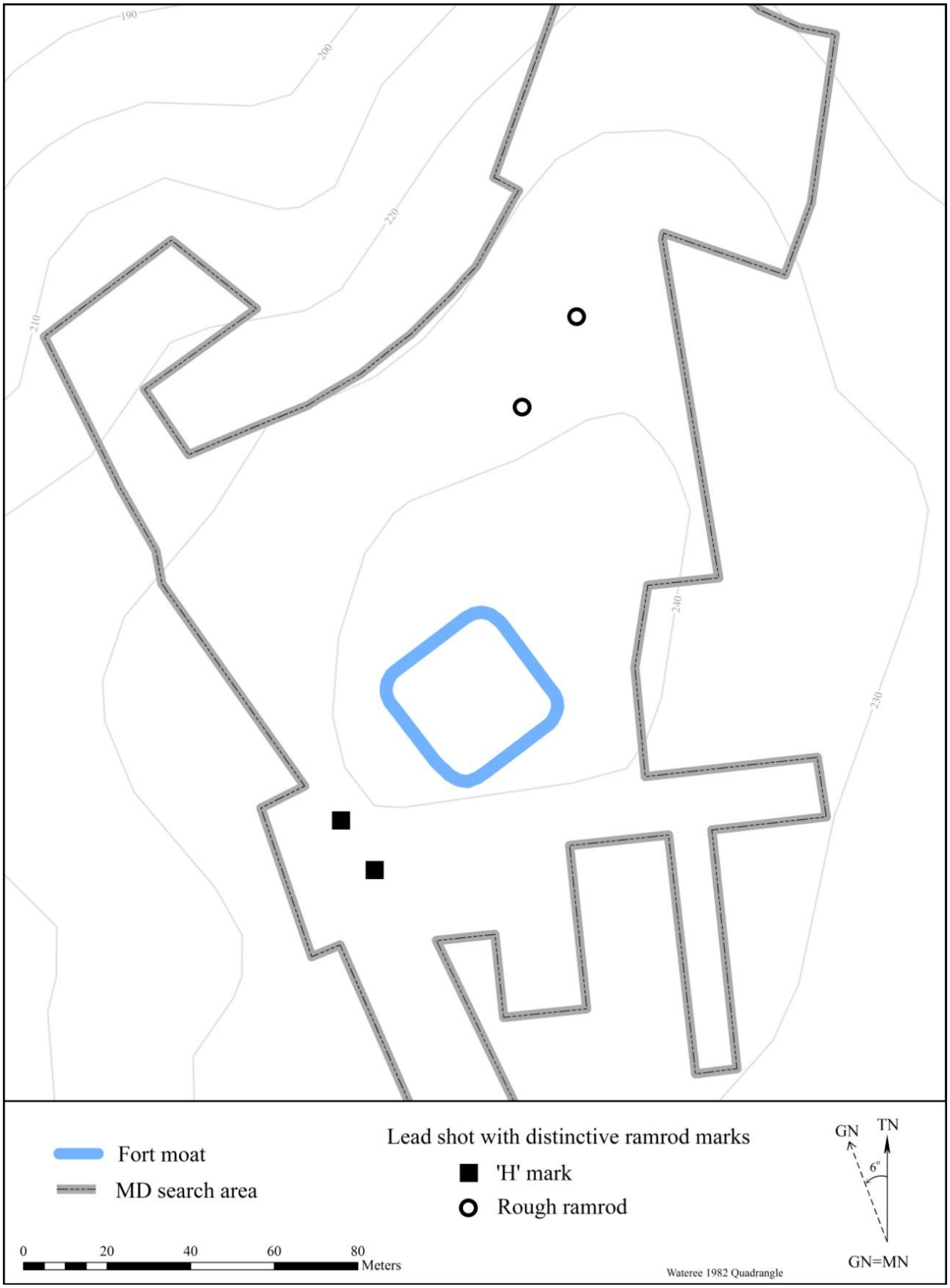

Figure 7.24 Spatial Analysis of Lead Shot with Distinctive Ramrod Marks

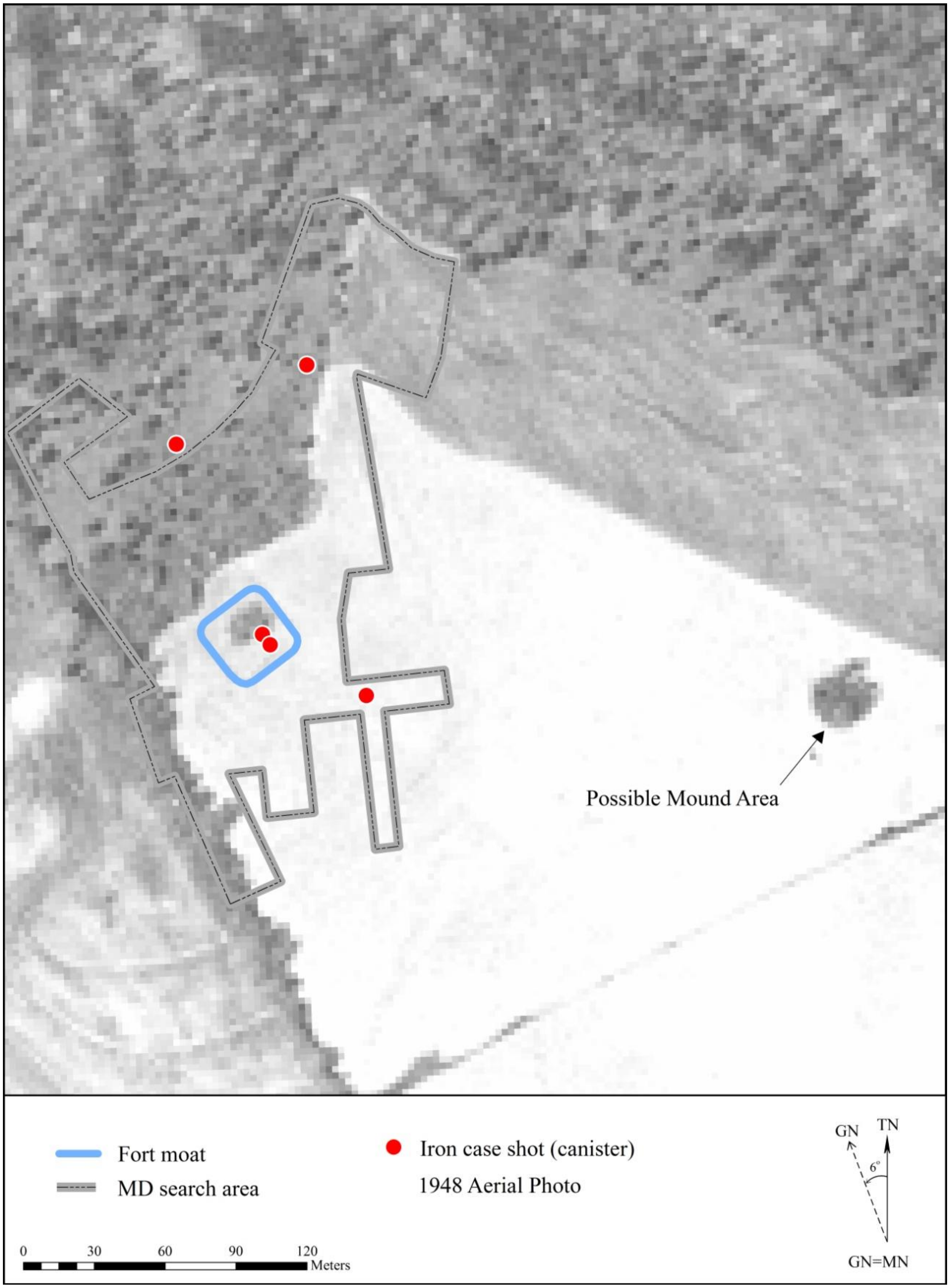

Figure 7.25 1948 aerial photograph detailing the spatial distribution of canister at Fort Motte

7.4 OTHER METAL DETECTION AREAS

Although this thesis focused on two major anomalies in the area in the immediate vicinity of the fort moat (Metal Detection Areas 3, 5, and 6), a total lead shot analysis was conducted and included the entirety of the Fort Motte assemblage. The findings from the two other areas investigated in 2012 (Area 12 and Area 18) are briefly discussed below. Information on all previous Metal Detection Areas can be found in Smith et al. (2007: 38-39). Additionally, a catalog detailing the entire lead shot assemblage recovered between 2005 and 2012 can be found in Appendix A.

Metal Detection Area 12

Area 12 is located on the southeast portion of the unnamed hill northeast of Fort Motte. This area has been identified as the overseer's house site. A total of fourteen lead shot were recovered from Area 12. Two of the balls had been cut, however, and only rifle balls (n=10) and trade gun/carbine balls (n=2) could be positively identified from the lead shot recovered from this area. It is uncertain whether the lead shot recovered from Area 12 is the result of the American encampment during the siege of Fort Motte (Lee 1869: 345; Smith et al. 2007: 23) or the result of domestic site related slaughtering practices and hunting. However, this site was certainly occupied during the time of the American Revolution.

Twelve lead shot were included in the weight/diameter analysis for Area 12. The weight/diameter analysis shows a small cluster of four rifle balls between 16.0 and 17.0g. All of these were fired and show evidence of either wood or bone impacts. A 14.8g/.548" rifle ball and a 19.2g/.598" trade gun ball also show evidence of bone impact. This may be suggestive of slaughtering practices and more indicative of a domestic site.

Table 7.4

Area 12 (overseer's house site) Total Lead Shot Summary	
Ammunition Type	Quantity
Buckshot	0
Rifle balls	10
Trade gun / carbine balls	2
.65 or .67 caliber carbine or .65 caliber pistol balls	0
.69 caliber musket balls	0
.75 caliber musket balls	0
TOTAL	12

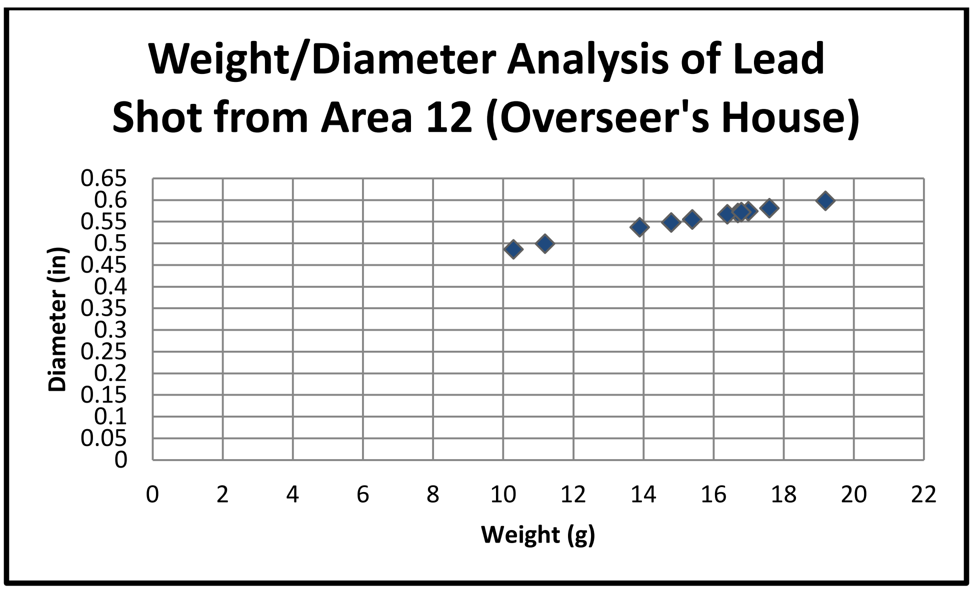

Figure 7.26 Weight/diameter analysis of lead shot from Area 12 (overseer's house)

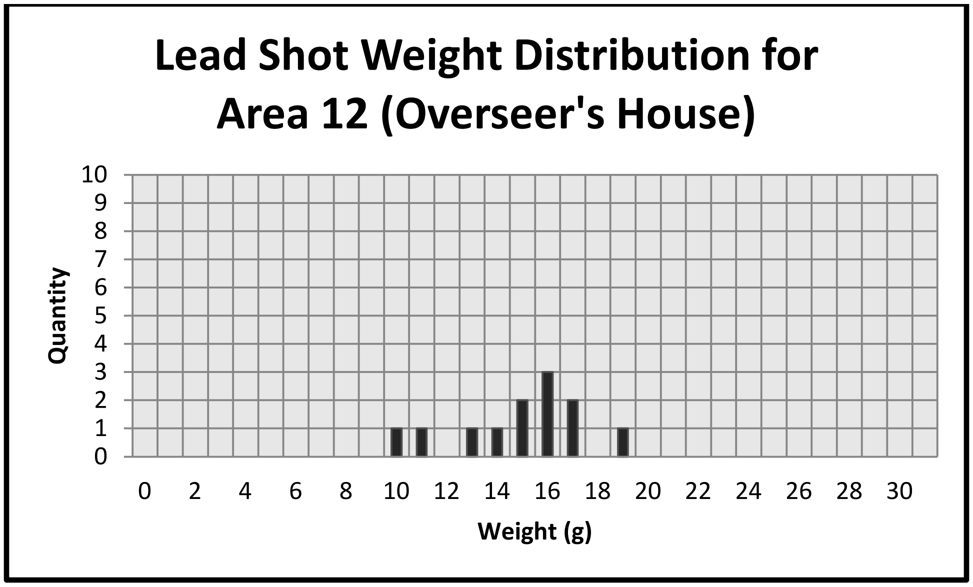

Figure 7.27 Lead shot weight distribution for Area 12 (overseer's house)

Metal Detection Area 18

Area 18 is located on the ridge west of Fort Motte and has tentatively been identified as a possible American camp site. A total of twenty-three lead shot and one lead alloy ball were recovered from this area. The majority of the ammunition has been categorized as buckshot (n=14). Most of the buckshot were unfired and are considered dropped (n=13). This is suggestive of a camp occupation. One .75 caliber musket ball, three .69 caliber musket balls, one trade gun or carbine ball, and five rifle balls (including one composed of lead alloy) were also recovered from Area 18.

One melted piece of lead and the one lead alloy rifle ball were not included in a weight/diameter analysis. However, the lead alloy rifle ball was included in the overall count of lead shot (Table 7.5). The weight/diameter analysis of the Area 18 data did not reveal any significant clusters except for the concentration of buckshot between 2.0g and 4.0g.

Table 7.5

Area 18 (camp site) Total Lead Shot Summary	
Ammunition Type	Quantity
Buckshot	14
Rifle balls	5
Trade gun / carbine balls	1
.65 or .67 caliber carbine or .65 caliber pistol balls	0
.69 caliber musket balls	3
.75 caliber musket balls	1
TOTAL	24

CHAPTER 8

CONCLUSION

8.1 SUMMARY

The siege of Fort Motte took place May 6-12, 1781, at a small British post in the South Carolina backcountry. This battle was not an isolated event. It was embedded in the political, cultural, tactical and technological dynamics of the mid-eighteenth century. Both British and American forces primarily favored linear tactics at this time. The majority of firearms used were muskets, with rifles and other firearms being utilized in secondary roles in specific contexts. The siege of Fort Motte was fought according to the general rules of warfare at this time. The Americans, made up of Francis Marion's militiamen and Henry Lee's Continentals, utilized sharpshooters while digging a sap close to the fort. The British, Hessian, and Loyalist defenders also utilized sharpshooting techniques to defend the fort. None of these general actions are abnormal within the context of eighteenth century warfare. However, the manner in which these actions were carried out can be analyzed in terms of individual agency, as this thesis has demonstrated.

For this thesis, I conducted a detailed analysis of the ammunition recovered from the Fort Motte site between 2004 and 2012. I specifically focused my analysis on lead shot, conducting a general surface analysis, weight/diameter analysis, and spatial distribution analysis to best examine the assemblage in terms of individual combat behavior.

Two anomalies were explored further during this analysis. First, a high quantity of .54 caliber rifle balls was observed. Such a single large cluster has not been seen in lead shot assemblages before, even at Fort Watson where there is significant historical documentation of the active presence of several riflemen sharpshooters (Ferguson 1973; MacKay 1781), and denotes specific sharpshooting behavior. This cluster was compared to lead shot assemblages from seven other Revolutionary War military sites. Despite the most common range of rifle caliber during the mid-eighteenth century being between .50 and .55 caliber (Legg in Smith et al. 2007: 55), the .54 caliber cluster at Fort Motte remained significant in its own right. Within the .54 caliber cluster, two distinct types of firearms were involved: a rifle and a 'smoothbore rifle.' Therefore, this anomaly can be interpreted as evidence for the individual sharpshooting activity of at least two individuals.

Second, six .75 caliber musket balls were observed to show evidence of minimal windage. Such material evidence has not been seen in lead shot assemblages before and denotes specific sharpshooting behavior. All of the minimal windage balls were recovered along the sap line and had sand impacts. Because of their location along the sap line with the majority of .75 caliber musket balls, these balls are interpreted as being fired by a British soldier or a Loyalist from within the fort who was acting as a sharpshooter in order to more effectively delay or halt the American siege efforts.

8.2 INDIVIDUAL COMBAT BEHAVIOR DURING THE SIEGE OF FORT MOTTE

Several individuals can be seen in the Fort Motte ammunition data. These include at least two American riflemen sharpshooters (whose fired balls make up the 15g/.54 caliber cluster), the British or Loyalist sharpshooter (firing .75 caliber shot from a .69 caliber musket), the two individuals using distinctly identifiable ramrods, and the American artillery officer.

American Riflemen

Using the historical data regarding American riflemen at Fort Motte, it is likely that one or maybe both of the individuals whose efforts made up the .54 caliber cluster can be identified. Two American casualties were sustained during the Siege of Fort Motte: Lieutenant Allen MacDonald[14] and Lieutenant Cruger[15] (Smith et al. 2007: 26-27). As discussed in Chapters 3 and 4, MacDonald was renowned for his ability as a sharpshooter. Prior to his death at Fort Motte, he had been noted, as a sergeant, for courage and bravery as well as his extremely accurate long-distance shots (Bass 1959: 150). “He was a native of Cross creek, in North-Carolina, and his father and other relations had espoused the opposite side of the cause” (James 1821: 121). Prior to the Siege of Fort Motte, MacDonald had been advanced to a lieutenancy (James 1821: 121). James (1821: 121) writes that MacDonald was killed “At the commencement of this siege.” However, as the siege lasted six days, it is uncertain how long into the battle MacDonald survived.

[14] Spelled McDonald in James (1821: 121)
[15] Possibly same as Lieutenant Cryer in James (1821: 121)

The other casualty, a Lieutenant Cruger (or Cryer) is associated with MacDonald. James (1821: 121) states that "Lieut. Cryer, who had often emulated McDonald, shared a similar fate" at Fort Motte. Perhaps MacDonald acted as a sharpshooter until he was killed, then another gunman (possibly Cryer) took his place. Perhaps MacDonald and another gunman (possibly Cryer) acted as sharpshooters simultaneously. There is also the possibility that McDonald was not involved in sharpshooting during the Siege of Fort Motte; however, due to his previous sharpshooting reputation and flare for bravado (Bass 1959: 150), it seems unlikely that he would have remained uninvolved.

Furthermore, given that the British were behind a significant fortification and that the only means of capturing the fort involved a siege, sharpshooting to keep the British within the fort walls and to protect the sap diggers was a logical and effective siege tactic. It is highly unlikely that Marion, who often made use of riflemen, would forego MacDonald's skill at Fort Motte.

Additionally, Bass (1959: 194) states that these fatalities (MacDonald and Cryer) were regarded as "considerable losses" for Marion. While Marion would undoubtedly have regretted any losses sustained in battle, the term "considerable losses" suggests a closer relationship. It has been suggested that Francis Marion frequently utilized riflemen sharpshooters and relied heavily on a group of loyal and highly-skilled riflemen, specifically McCottry's riflemen (Bass 1959; James 1821). MacDonald and Cryer may have been part of such a group.

British/Loyalist shooter

The six minimal windage .75 caliber balls recovered from the sap line area also indicate individual action. While it is not possible to infer the exact historical identity of this individual, it may be possible to deduce certain identifiers based on his knowledge of firearm technology and action within the structure of eighteenth century military culture. Someone within the fort acted as a sharpshooter, firing .75 caliber musket balls from a .69 caliber musket to achieve the same proximal accuracy as firing with a rifle. Based on the structural conditions present in the mid-eighteenth century in the backcountry and along the frontier, it is most likely that this individual was a Loyalist rather than a British soldier. While the British were certainly familiar with rifles, a close familiarity was not common among the ranks of infantrymen. Therefore, it is likely that this individual was a resident of the colonial backcountry where knowledge and use of such firearms was more commonplace.

Individuals with Distinctive Ramrods

As discussed in Chapter 7, two distinct ramrod marks were observed during my lead shot analysis: an 'H' mark and a rough mark. Based on the size of the 'H' mark rifle balls, they are likely the result of fire by one of the .54 caliber American sharpshooters discussed above. The two balls with a rough ramrod mark are both of carbine/trade gun ball size and were recovered from the sap line area. It is uncertain whether these balls were fired by an individual besieging or defending Fort Motte. In order to be able to interpret this individual action, a complete metal detection survey of the entire field surrounding the fort would be necessary in order to gain additional data.

American Artillery Officer

The leadership actions of Captain Ebenezer Finley, the American artillery officer, can be seen in the distribution of iron canister shot recovered between 2004 and 2013 (n=5). A total metal detection survey of the field surrounding Fort Motte would also reveal a more complete picture of Captain Finley's involvement in the siege. However, his action during the siege and the placement of the six-pounder significantly contributed to the American victory. Without the American artillery piece, the British may have been able to extinguish the flames on the roof of the Motte house and the siege may have had a different outcome.

8.3 INDIVIDUAL AGENCY

Johnson (1989: 190) states that "it is an oversimplification and a misconception to confuse the search for human agency with the archaeological identification of individuals." However, he supports the possibility that both could be studied in a specific situation. Johnson (1989: 190) goes on to assert that "the use of 'individuals' known through the documents offers one *means* of attaining the *end* of tackling the theoretical question of 'the individual.'"

While very interesting, the individual action of Ebenezer Finley and the two individuals using distinctly identifiable ramrods, cannot be analyzed in terms of individual agency based on the data presented in this thesis. Therefore, the following discussion of agency will focus on the two American riflemen whose efforts produced the .54 caliber cluster, Francis Marion (based on his leadership and tactical decisions documented in historical sources), and the British/Loyalist sharpshooter firing .75 caliber balls from a .69 caliber musket.

A soldier ideally fought within the culturally accepted structure of war and with certain fighting techniques that were socially imposed upon him; however this does not insinuate that individuals acted in a pre-ordained manner. Soldiers and militiamen of the mid-eighteenth century were not unthinking puppets of the larger cultural structure. It is important to emphasize that for every action, an individual *chose* to act as he did, utilizing his cultural, technological, tactical, and personal knowledge to achieve a certain goal. It is also critical to stress that at any given time, an individual *could* have chosen to act differently.

The two American .54 caliber rifle sharpshooters chose to act within cultural and technological norms in their attempt to immobilize the defenders within the fort. Although their attempts may not have worked as intended, the actions of these men did contribute to the overall outcome of the siege.

Robb (2010: 501) states that agency involves individuals acting creatively, “varying what they do to accomplish a proximate intention.” Agency may be based in habit and regular action, but it also involves creative intention in the manner that it is carried out. Francis Marion’s actions can also be understood in terms of agency. It can be argued that Francis Marion’s decision to maintain a group of loyal and skilled riflemen was a selective tactical response to the nature of partisan warfare in the backcountry of South Carolina as well as the practical application of available resources including rifles, skilled riflemen, and the forested environment. It is known that Marion decried the unreliability of the militia and that he preferred to command regular soldiers who could be relied upon to remain in the ranks for the entire course of the war (Smith, pers.com. October 4, 2013). In a siege situation at both Fort Watson and Fort Motte, Marion adapted to the tactical situation present within the context of eighteenth century warfare; the archaeological evidence suggests that he relied not only on riflemen, but two particularly skilled sharpshooters.

The individual combat behavior evidenced by the six minimal windage balls can also be analyzed as intentional alternative action. As the lead shot analysis suggests (Chapter 7), the defenders within the fort may have had access to a rifle. Regardless of this detail, the defending sharpshooter (likely a Loyalist) who fired the minimal windage .75 caliber musket balls hoped to achieve the same goal as firing a rifle, within the social and technological constraints that were in effect during the siege.

In his discussion of combat tactics used during the American Revolution, Stephenson (2007: xxiii) stated that "there were no technical or tactical innovations on the battlefield." However, such a statement is nullified by the evidence observed at Fort Motte. The Loyalist shooter intentionally rammed a .75 caliber ball into a .69 caliber musket, knowing that such an adjustment would increase the distance and accuracy of his projected fire. Therefore, he selectively utilized his knowledge of firearm technology and military culture in order to more accurately aim at further distances. As discussed above, one or both of the American sharpshooters may have been shot and killed during the siege. Knowing that these individuals were practiced and skilled at sharpshooting and likely utilizing irregular tactics speaks to the prowess and ability of the defending

Loyalist sharpshooter. He was able to achieve his proximate goal to such an extent as to possibly eliminate the two major American protagonists.

Ultimately, my detailed lead shot analysis has allowed for a much more comprehensive assessment of the siege of Fort Motte. While certainly not exhaustive, this thesis presents evidence for several instances of individual combat behavior during the siege. I have attempted to analyze this behavior in terms of individual agency within a larger context of military culture. Individual combat behavior was assessed in terms of proximal goals and motives while situating individual agents within the framework of the cultural, tactical, and technological structure of the mid-eighteenth century.

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APPENDIX A

LEAD SHOT CATALOG

Table A.1 Fort Motte Lead Shot (Metal Detection Areas 3, 5, and 6 and unit excavation)

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
buckshot	1.9	0.276	yes	fired		03.081.001	lead	
buckshot	2.2	0.29	yes	fired		03.287.001	lead	period buckshot, probably from a "buck and ball" cartridge
buckshot	2.3	0.295	yes	fired		03.289.001	lead	period buckshot
buckshot	2.5	0.303	yes	fired		03.281.001	lead	
buckshot	2.7	0.311	yes	fired		03.291.001	lead	period buckshot
buckshot	3	0.345	no	unfired		03.095.001	lead	incomplete casting
buckshot	3	0.322	yes	fired		03.255.001	lead	cast, with mold seam
buckshot	3.1	0.325	yes	fired	sand	03.032.001	lead	
buckshot	3.3	0.334	no	unfired		03.054.001	lead	very irregular mold
buckshot	3.7	0.345	yes	fired	wood	03.039.001	lead	
buckshot	3.7	0.345	yes	fired	wood	03.115.001	lead	
probable rifle ball	4.6	0.376	no	unfired		03.076.001	lead	powder corrosion
probable rifle ball	5.4	0.391	yes	fired	wood	05.005.001	lead	
probable rifle ball	6.2	0.395	no	unfired		03.107.001	lead	somewhat oblong (height is .432")
probable rifle ball	6.2	0.41	yes	fired	wood	03.148.001	lead	possible wood fibers in lead (?)
probable rifle ball (indeterminate)	6.3	0.412	yes	fired	sand	03.057.001	lead	slight rodent gnawing, a somewhat cylindrical ball, about .380" diameter, but length about .450"
probable rifle ball	6.3	0.412	yes	fired	wood	03.079.001	lead	ball began to turn inside out from direct impact

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball	6.5	0.416	yes			03.207.001		deliberately flattened ball
probable rifle ball (indeterminate)	6.7	0.413	no	unfired		03.004.001	lead	sprue cut and mold seam visible
rifle ball (rifled)	6.9	0.424	yes	fired	wood	03.051.001	lead	patch marks and rifling visible
probable rifle ball (indeterminate)	7.6	0.438	yes			03.003.001	lead	hog chewed
rifle ball (rifled)	8.6	0.457	yes	fired	sand	03.280.001	lead	patched rifling marks
rifle ball	8.8	0.46	yes	fired	wood	03.061.001	lead	patch marks
probable rifle ball	9.1	0.466	yes	fired	wood	03.183.001	lead	
probable rifle ball	9.3	0.469	yes	fired	sand (?)	03.224.001		
probable rifle ball	10.2	0.484	yes	fired	wood	03.247.001	lead	clear wood grain visible
rifle ball (indeterminate)	10.5	0.488	yes	fired	wood	03.060.001	lead	two corrosion blisters, patch marks
probable rifle ball	10.8	0.493	yes	fired	wood	03.197.001	lead	very clear wood impact, gas hole on sprue cut
rifle ball (rifled)	11.2	0.499	yes	fired	wood	03.005.001	lead	rifling marks, slight rodent gnawing
probable rifle ball	12.2	0.514	yes			03.192.001	lead	extensively hog chewed (recent)
probable rifle ball	12.5	0.518	yes	fired	wood	03.168.001		possible patch mark
probable rifle ball (indeterminate)	12.7	0.521	yes	fired		03.278.001	lead	chewed, no surface detail
probable rifle ball	13.1	0.537	no	unfired		03.035.001	lead	incomplete casting, mold seam visible

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
rifle ball	13.3	0.528	yes	fired		03.059.001	lead	nearly cut in half by disc blade
rifle ball	13.6	0.532	yes	fired	wood and sand	03.019.001	lead	patch marks
rifle ball (rifled)	13.8	0.535	yes	fired		03.227.001		rifling visible (3 maybe 4 grooves), clear patch marks
rifle ball	14.1	0.539	yes	fired	sand	03.104.001	lead	patch marks, sprue cut and mold seam visible
probable rifle ball	14.2	0.541	yes	fired	wood	03.217.001	lead	sprue mark, possible patch marks on top of sprue cut
rifle ball	14.3	0.541	yes	fired	wood	03.008.001	lead	patch marks
probable rifle ball	14.4	0.543	yes	fired		03.103.001	lead	
rifle ball (rifled)	14.5	0.544	yes	fired	wood	03.091.001	lead	rifling marks
probable rifle ball	14.7	0.546	yes	fired	wood	03.023.001	lead	ball began to turn inside out from direct impact
probable rifle ball (indeterminate)	14.7	0.546	yes	fired	wood	03.285.001	lead	very clear wood impact, also very clear ramrod mark
probable rifle ball (indeterminate)	14.9	0.549	yes	fired	wood	03.016.001	lead	massive impact
rifle ball (rifled)	15	0.551	yes	fired	wood	03.135.001	lead	distinct rifling marks, no patch marks, definitely a rifled rifle with no patch
rifle ball (indeterminate)	15.1	0.551	yes	fired		03.010.001	lead	patch marks
rifle ball (smoothbore?)	15.1	0.552	yes	fired		03.098.001	lead	cylindrical barrel mark, patch mark

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
rifle ball (indeterminate)	15.1	0.552	yes	fired	wood	03.105.001	lead	patch marks
rifle ball (indeterminate)	15.1	0.551	yes	fired	wood	03.121.001	lead	patch marks
probable rifle ball (indeterminate)	15.1	0.552	yes	fired	wood	03.136.001	lead	
probable rifle ball (indeterminate)	15.1	0.552	yes	fired	wood	03.175.001		no rifling or patchmarks visible, sprue and mold seam visible
rifle ball (smoothbore)	15.2	0.553	yes	fired	wood	03.029.001	lead	patching
rifle ball (rifled)	15.2	0.553	yes	fired	wood	03.049.001	lead	patch marks and rifling visible
rifle ball (smoothbore)	15.2	0.552	yes	fired		03.052.001	lead	patch marks, full smoothbore barrel mark
rifle ball (smoothbore)	15.2	0.553	yes	fired	wood	03.065.001	lead	patch mark, barrel mark
rifle ball (smoothbore)	15.2	0.553	yes	fired	wood	03.080.001	lead	spectacular patch marks all the way around the barrel mark, definitely a smoothbore rifle
rifle ball (smoothbore)	15.2	0.553	yes	fired	wood	03.215.001		patching, barrel mark with patching, good example of smoothbore barrel mark, clear patch marks, glancing wood impact
rifle ball (rifled)	15.3	0.554	yes	fired		03.011.001	lead	patched, rifling marks

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
rifle ball (rifled)	15.3	0.554	yes	fired	wood	03.014.001	lead	rifling marks
rifle ball (smoothbore)	15.3	0.554	yes	fired	wood	03.030.001	lead	strong smooth barrel mark, no patching
rifle ball (rifled)	15.3	0.554	yes	fired	wood	03.033.001	lead	rifling, patch mark on ram rod mark, rough
rifle ball (smoothbore)	15.3	0.554	yes	fired	wood	03.078.001	lead	patch marks, very nice smoothbore barrel mark with very clear patching
rifle ball (indeterminate)	15.3	0.554	yes	fired	wood	03.126.001	lead	patch marks
probable rifle ball (indeterminate)	15.3	0.554	yes	fired	wood	03.181.001		no visible rifling marks
rifle ball (smoothbore)	15.3	0.554	yes	fired	wood	17.016.001		multiple clear patch marks, smoothbore rifle- cylindrical barrel mark
probable rifle ball (indeterminate)	15.4	0.555	yes	fired		03.009.001	lead	ram rod mark, "H" imprinted on ram rod mark, barrel mark
rifle ball (smoothbore)	15.4	0.555	yes	fired	wood	03.031.001	lead	smoothbore rifle, barrel mark, lots of patch marks, whole top of ball covered in patch mark
probable rifle ball (indeterminate)	15.4	0.555	yes	fired	wood	03.041.001	lead	massive wood impact
rifle ball (indeterminate)	15.4	0.555	yes	fired	wood	03.048.001	lead	patch mark

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
rifle ball (smoothbore)	15.4	0.555	yes	fired	wood	03.096.001	lead	patch marks on impact surface, possibly hit fabric (either someone or its own patch on a wood impact), other patch marks, smooth barrel mark
rifle ball (smoothbore?)	15.4	0.555	yes	fired		03.153.001	lead	no patching visible, possible smoothbore barrel mark
rifle ball (rifled)	15.4	0.555	yes	fired	wood	05.005.001	lead	nice rifling
probable rifle ball (indeterminate)	15.4	0.555	yes	fired	wood	17.014.001	lead	no patching, no rifling, sprue cut visible
rifle ball (indeterminate)	15.5	0.556	yes	fired	sand	03.027.001	lead	fired but undistorted, patch mark, "H" imprint on ramrod mark
rifle ball (indeterminate)	15.5	0.556	yes	fired	wood	03.137.001	lead	patch marks
rifle ball (indeterminate)	15.5	0.556	yes	fired		06.005.001	lead	patch marks
probable rifle ball (indeterminate)	15.6	0.557	yes	fired	wood	06.006.001	lead	
rifle ball (smoothbore?)	15.7	0.559	yes	fired	wood	03.090.001	lead	barrel mark, probably smoothbore rifle
probable rifle ball (smoothbore)	15.7	0.559	yes	fired	wood	03.261.001	lead	slight chewing, barrel mark - not sure if patching
rifle ball (smoothbore)	16.1	0.563	yes	fired	wood	03.001.001	lead	patch marks on sprue, smoothbore rifle ball, barrel mark all the way around

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball	16.1	0.563	yes	fired	wood	03.144.001	lead	lightly chewed
probable rifle ball	17	0.573	yes	fired	wood	03.082.001	lead	gas hole on sprue
probable rifle ball	17.3	0.577	yes	fired	wood	17.002.001	lead	strong wood grain visible, direct wood impact
rifle ball (rifled)	17.9	0.584	yes	fired	sand	03.286.001	lead	nice rifling marks, unpatched
trade gun or British carbine ball	18.1	0.586	yes	unfired		17.024.001	lead	sprue cut and mold seam visible (trade gun / British carbine size)
trade gun or British carbine	18.4	0.589	yes	unfired		17.015.001	lead	sprue and mold seam visible, trade gun / British carbine size
carbine or trade gun	19	0.596	yes	fired	sand	03.284.001	lead	impossible to say whether trade gun or French carbine ball
carbine or trade gun	19.3	0.598	yes	fired	sand	03.262.001	lead	smooth barrel mark, good size for trade gun ball or a French carbine ball, (dirty ram rod?)
carbine or trade gun	20	0.606	yes	fired		03.269.001	lead	smooth barrel mark, air hole on sprue, good size for trade gun ball or a French carbine ball, (dirty ram rod?) Has identical ram rod mark as 03.262.001
.65 or .67 cal carbine or .65 cal pistol	21.1	0.616	yes	fired	sand	03.140.001	lead	mold seam and sprue visible

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.65 or .67 cal carbine or .65 cal pistol	21.1	0.616	yes	fired	sand	03.152.001	lead	full barrel mark (barrel about .60 cal.), rammed on axis of sprue, carefully loaded upright
.65 or .67 carbine or pistol or .69 cal. musket	22.1	0.626	yes	fired	wood	03.036.001	lead	
.69 cal musket	22.9	0.634	yes	fired	sand	03.230.001		
.69 cal musket	23.2	0.636	yes	fired	wood	03.024.001	lead	
.69 cal musket	23.2	0.636	yes	fired	sand	03.055.001	lead	
.69 cal musket	23.2	0.636	yes	fired	wood	03.127.001	lead	
.69 cal. musket	23.2	0.636	yes	fired		03.288.001	lead	very beat up, appears to have hit the ground several times
.69 cal. musket	23.9	0.642	yes	fired	wood	03.257.001	lead	massive wood impact
.75 cal musket	28.5	0.681	yes	fired	sand	03.087.001	lead	
.75 cal. musket	28.5	0.681	yes	fired	wood	06.008.001	lead	minor rodent gnawing
.75 cal musket	28.7	0.683	yes	fired	sand	03.056.001	lead	heavy barrel mark (a .75 cal. musket ball, but apparently fired in a much smaller barrel, probably a .69 cal. musket)
.75 cal. musket	28.8	0.684	yes	fired	sand	03.290.001	lead	strong shovel mark / finder's mark

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.75 cal musket	29	0.686	yes	fired	sand	03.202.001	lead	90 degree sand impact, dead-on direct hit, very strong barrel mark (hypothesized that the .75 cal ball was rammed into a .69 cal musket to achieve greater accuracy)
.75 cal. musket	29.1	0.687	yes	fired	sand	03.260.001	lead	massive sand impact, hit at a 45° angle- may have hit the parapet of the sap (a good sap ball)
.75 cal musket	29.2	0.687	yes	fired	sand	03.085.001	lead	heavy barrel mark (a .75 cal. musket ball, but apparently fired in a much smaller barrel, probably a .69 cal. musket)
.75 cal musket	29.2	0.687	yes	fired	sand	03.086.001	lead	heavy barrel mark (a .75 cal. musket ball, but apparently fired in a much smaller barrel, probably a .69 cal. musket). Diameter of the completely intact barrel mark is only .70" even after impact
.75 cal musket	29.2	0.687	yes	fired	sand	03.141.001	lead	possible complete barrel mark
.75 cal. musket	29.3	0.688	yes	fired	sand	03.282.001	lead	sand impact on both ends
.75 cal musket	29.4	0.689	yes	fired	sand	03.018.001	lead	at least one barrel scuff mark
.75 cal. musket	29.4	0.689	yes	fired	wood	03.259.001	lead	massive wood impact

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.75 cal musket	29.5	0.689	yes	fired	sand	03.088.001	lead	
.75 cal. musket	29.5	0.689	yes	fired	sand	03.293.001	lead	light barrel mark, oblique sand impact
.75 cal musket	29.6	0.69	yes	fired	wood	03.026.001	lead	at least one barrel scuff mark, minor rodent gnawing
.75 cal. musket	29.6	0.69	yes	fired	sand	03.256.001	lead	finder's mark, smooth barrel mark
.75 cal. musket	29.7	0.691	yes	fired	sand	03.263.001	lead	old plow cut evident
.75 cal musket	29.8	0.692	yes	fired	sand	03.084.001	lead	
.75 cal musket	29.8	0.692	yes	fired	sand	03.142.001	lead	
.75 cal. musket	29.8	0.692	yes	fired	sand	03.283.001	lead	
.75 cal musket	29.9	0.692	yes	fired	sand	03.083.001	lead	
.75 cal musket	29.9	0.692	yes	fired	sand	03.092.001	lead	at least two barrel scuff marks, shovel/plow mark
.75 cal musket	29.9	0.692	yes	fired	sand	03.149.001	lead	
.75 cal. musket	29.9	0.692	yes	fired	sand	03.251.001	lead	finder's mark, smooth barrel mark
.75 cal. musket	29.9	0.692	yes	fired	sand	03.266.001	lead	big smooth barrel mark, sand grains still present
.75 cal. musket	30	0.693	yes	fired	wood	03.250.001	lead	massive wood impact, quite deformed
.75 cal musket	30.1	0.694	yes	fired	sand	03.150.001	lead	three or four plow/shovel marks, at least one barrel scuff mark
.75 cal musket	30.5	0.693	no	unfired		03.139.001	lead	
.75 cal musket	30.5	0.697	yes	unfired		03.154.001		dropped

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.75 cal. musket	30.5	0.697	yes	fired	sand	03.279.001	lead	strong barrel mark, probably fired from a .69 cal. musket, oblique sand impact
.75 cal musket	30.6	0.694	no	unfired		03.038.001	lead	rolled, with cartridge powder mark
.75 cal. musket	30.6	0.698	yes	fired	sand	06.007.001	lead	at least two barrel scuff marks
.75 cal musket	30.7	0.69	no	unfired		03.069.001	lead	rolled
.75 cal musket	30.7	0.686	no	unfired		03.077.001	lead	crudely trimmed sprue, unrolled, light chewing - (not the typical British manufacture)
.75 cal musket	30.8	0.699	yes	fired	sand	03.138.001	lead	at least two barrel scuff marks, minor rodent gnawing
.75 cal. musket	31.4	0.704	yes	fired	sand	03.272.001	lead	very strong barrel mark, probably fired out of a French .69 cal. musket

Table A.2 Spherical shot (Areas 3, 5, and 6) not included in Weight/Diameter Analysis

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.75 cal musket	28.8	0.686	no	unfired		03.012.001	lead	rolled, rodent gnawing, underweight
.65 cal. carbine / .69 cal. musket	21.4	>.619	yes			03.022.001	lead	p.d. >.619", badly chewed and possibly underweight
cut						03.034.001	lead	neatly cut quarter section (probable of a .75 cal. musket ball)
.69 or .75 cal musket	26.5	0.665	no	unfired		03.044.001	lead alloy (pewter?)	sprue cut, .69 or .75 cal. musket ball
probable rifle ball	8.2		no	fired		03.062.001	lead alloy (pewter?)	
cut	14.1			fired		03.064.001	lead	deliberately cut after firing, probable rifle ball
.75 cal musket	29.2	0.681	no	unfired		03.070.001	lead	rolled, heavy rodent chewing, underweight
cut	6.8			fired	sand	03.089.001	lead	cut quarter section, cut before firing
cut	14.9	>.549	yes	fired		03.102.001	lead	two axe or knife cuts after firing, portion of ball missing, underweight, patch marks
probable rifle ball (indeterminate)	15.4		no	fired		03.110.001	lead alloy	chewed
probable rifle ball (cut)	13.6	0.532	yes	fired		03.120.001	lead	square nail hole through entire ball and deep knife cut
probable rifle ball	12.9	0.523	yes			03.123.001	lead	heavily hog chewed and possibly underweight
.67 cal. carbine or .69 cal. musket	20.9	0.629	no	unfired		03.124.001	lead	heavy rodent gnawing, underweight, sprue cut and mold seam visible

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball (indeterminate)	15.2		no	fired	wood	03.130.001	lead alloy (pewter?)	blistered surface, possibly underweight for size
probable rifle ball	11.3		no	fired		03.133.001	lead alloy (pewter?)	badly corroded and underweight (p.d. as lead .500", actually about .550")
melted lead	15					03.199.001	lead	folded piece of melted lead
buckshot	2.3			unfired		03.203.001	lead alloy	sprue mark and mold seam visible
buckshot	3.2			fired		03.258.001	lead	fired as buckshot, not as "buck and ball", not fired as a musket cartridge-faceted from other buckshot, probably post-Revolutionary War
rifle ball (indeterminate)	15.6					03.271.001	lead alloy	no rifling visible
rifle ball (rifled)	15.4			fired		03.273.001	lead alloy	unpatched rifling, similar patina as 03.271.001, probably exact same alloy, both some kind of impure lead
probable rifle ball (indeterminate)	15.9			fired		03.276.001	pewter	underweight, highly corroded
probable rifle ball	12.4	0.517	yes	unfired (?)		17.015.002	lead	possibly unfired, heavy rodent gnawing all over, underweight
melted lead	4.3					17.027.001	lead	melted

Table A.3 Lead Shot from Metal Detection Areas 4, 11, and 15

Area 4

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Area #	Composition	Additional Information
.75 cal. musket	29	0.685	yes	fired	sand	04.002.001	4		
probable rifle ball	17.1	0.575	yes	fired		04.003.001	4	lead	

Area 11

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Area #	Composition	Additional Information
.75 cal. musket	30.3	0.689	no	unfired		11.001.001	11		
rifle ball, .65 cal or .67 cal. Carbine ball, or .65 cal. Pistol ball	19.9	0.61	no	unfired		11.003.001	11	lead	sprue cut visible

Area 15

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Area #	Composition	Additional Information
large buckshot or small rifle ball	4.2	0.36	yes	fired		15.001.001	15	lead	
rifle ball (rifled)	13.9	0.536	yes	fired	wood	15.004.001	15	lead	rifling marks, impact surface is very smooth (possibly hit a smooth rock or very soft wood)

Table A.4 Lead Shot from Area 12 - Overseer's House / Lee's Camp Site (2004-2012)

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball (indeterminate)	10.3	0.486	yes	fired	wood	12.053.001	lead	
probable rifle ball (indeterminate)	11.2	0.499	yes	fired		12.022.001	lead	possible double impact, completely mutilated, but appears to be complete
rifle ball	13.9	0.537	yes	fired		12.042.001	lead	
probable rifle ball (indeterminate)	14.8	0.548	yes	fired	wood / bone	12.040.001	lead	patina burned off
probable rifle ball (rifled)	15.4	0.555	yes	fired		12.023.001	lead	a hint of unpatched rifling visible, minor rodent chewing
probable rifle ball (indeterminate)	15.4	0.555	yes	unfired (?)		12.059.001	lead	whittled or beaten surface (facets all over), probably unfired, modern plow cut (current mass may not be indicative of original mass)
probable rifle ball (indeterminate)	16.4	0.567	yes	fired	wood	12.031.001	lead	ball turned inside out due to direct wood impact, sprue and mold seam visible
rifle ball (rifled)	16.7	0.57	yes	fired	wood	12.013.001	lead	rifling marks
probable rifle ball (indeterminate)	16.8	0.572	yes	fired		12.062.001	lead	hog chewed (recent)

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball (indeterminate)	17	0.574	yes	fired	wood / bone	12.017.001	lead	
trade gun / British carbine ball	17.6	0.581	yes	unfired		12.033.001	lead	sprue not cut completely, trade gun / British carbine size
trade gun / British carbine ball	19.2	0.598	yes	fired	bone	12.061.001	lead	pieces of bone imbedded in lead

Table A.5 Area 12 shot not included in weight/diameter analysis

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
melted lead	12.8					12.019.001	lead	probably a ball, but melted, recent plow damage
cut	18.1			unfired		12.028.001	lead	sprue, cut nearly in half then pushed back together (probably to make a fishing sinker)
melted lead	10.6					12.030.001	lead	melted
melted lead	13.6					12.032.001	lead	melted
cut	4.4					12.041.001	lead	cut segment of ball, 15-20% of a medium sized ball
torn	8.8			fired		12.048.001	lead	torn fragment of fired ball, not complete

Table A.6 Lead Shot from Metal Detection Area 18 (Camp Site)

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
buckshot	2.2	0.29	yes	fired		18.028.001	lead	period buckshot, mangled
buckshot	2.3	0.294	yes	unfired		18.024.001	lead	heavily chewed
buckshot	2.3	0.294	yes	unfired		18.025.001	lead	chewed
buckshot	2.4	0.298	yes	unfired		18.015.001	lead	
buckshot	2.4	0.298	yes	unfired		18.017.001	lead	
buckshot	2.4	0.298	yes	unfired		18.020.001	lead	
buckshot	2.5	0.302	yes	unfired		18.003.001	lead	
buckshot	2.5	0.302	yes	unfired		18.013.001	lead	
buckshot	2.6	0.306	yes	unfired		18.029.001	lead	
buckshot	3	0.321	yes	unfired		18.019.001	lead	
buckshot	3.4	0.335	yes	unfired		18.003.002	lead	
buckshot	3.5	0.338	yes	unfired		18.002.001	lead	
buckshot	3.5	0.338	yes	unfired		18.008.001	lead	
buckshot	3.9	0.351	yes	unfired		18.016.001	lead	large buckshot
probable rifle ball (indeterminate)	6	0.405	yes	fired	wood	18.005.001	lead	patchmark, possibly from a smoothbore rifle (.40 cal. rifle)
probable rifle ball (indeterminate)	8.6	0.457	yes	fired	sand	18.006.001	lead	
probable rifle ball (indeterminate)	14.9	0.549	yes	fired	sand	18.022.001	lead	
rifle ball (rifled)	15	0.551	yes	fired	wood	18.007.001	lead	unpatched rifling
British carbine or trade gun	19.2	0.597	yes			18.009.001	lead	hog chewed relatively recently, good size for either trade gun ball or carbine ball
.69 cal. musket ball	23.5	0.639	yes	unfired		18.004.001	lead	
.69 cal. musket ball	24.1	0.644	yes	fired	wood	18.027.001	lead	

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
.69 cal. musket ball	28.6	0.64	yes	unfired		18.001.001	lead	good example of a classic musket ball, cold cast wrinkles, sprue
.75 cal. musket ball	30.3	0.695	yes	fired	sand	18.010.001	lead	light sand impact, slight smooth barrel mark, definitely rolled- British

Table A.7 Area 18 shot not included in weight/diameter analysis

Ammunition Type	Weight	Diameter	Projected?	Fired?	Impact	Provenience	Composition	Additional Information
probable rifle ball (indeterminate)	14.9	0.549	yes	fired		18.011.001	lead alloy	(>.549 pd.), underweight due to alloy, patch marks, possibly from smoothbore rifle
half-melted shot				fired		18.012.001	lead	fired ball of some kind, half of it has melted away

Table A.8 Areas 3, 5, and 6 Canister Shot (2004-2012)

Iron Case Shot (Canister):	
iron canister	03.132.001
iron canister	03.254.001
iron canister	06.001.001
iron canister	17.025.001