Winter 2017

Beyond The Butcher's Block: The Animal Landscapes of Eighteenth-Century Chesapeake and Lowcountry Plantations

Jenna Kay Carlson Dietmeier
College of William and Mary - Arts & Sciences, pw_dondo@hotmail.com

Beyond the Butcher's Block: The Animal Landscapes of Eighteenth-Century Chesapeake and Lowcountry Plantations

Jenna Kay Carlson Dietmeier

Milbank, SD

Master of Arts, Illinois State University, 2011
Bachelor of Arts, University of Minnesota Duluth, 2009

A Dissertation presented to the Graduate Faculty
of The College of William & Mary in Candidacy for the Degree of
Doctor of Philosophy

Department of Anthropology

College of William & Mary
May 2017

APPROVAL PAGE

This Dissertation is submitted in partial fulfillment of
the requirements for the degree of

Doctor of Philosophy

Jenna Kay Carlson Dietmeier

Jenna Kay Carlson Dietmeier

Approved by the Committee, May 2017

Committee Chair
Associate Professor Neil L. Norman, Anthropology
The College of William& Mary

Joanne V. Bowen

Research Professor Joanne V. Bowen, Anthropology
The College of William & Mary

Research Professor Marley R. Brown, Anthropology
The College of William & Mary

Kathleen J. Bragdon

Professor Kathleen Bragdon, Anthropology
The College of William & Mary

President and CEO Carter C. Hudgins
Drayton Hall Preservation Trust

ABSTRACT

This dissertation argues that working oxen, horses, and mules contributed to the physical and social landscapes of eighteenth-century plantations in the Chesapeake and the Lowcountry. This research embraces an animal landscape approach, exploring how humans and animals were both active agents in shaping animal husbandry strategies, social interactions, and power negotiations on plantations. This exploration utilized archaeological and historical sources, predominately faunal assemblages from Oxon Hill Manor, Maryland, Mount Vernon, Virginia, Drayton Hall, South Carolina, and Stobo Plantation, South Carolina; articulated equine skeletons from Jamestown Island, Virginia, and Yorktown, Virginia; and probate inventories from plantations within the eighteenth-century Upper Chesapeake and Lowcountry. Working oxen and equines were identified from the archaeological record through pathological and osteometric analyses. Probate inventories supplied complementary information on the number of working oxen and equines in each region and the types of labors these animals performed. In the eighteenth-century Chesapeake, laboring oxen and equines were essential to the plowing and carting required by the shift from tobacco to mixed grain production. Working livestock were husbanded in a manner which relied on producing excess grains which could then be fed to the livestock. In the eighteenth-century Lowcountry, oxen were used sporadically throughout the region to ready fields or to cart products. Horses in the Lowcountry were essential to personal transportation, as many wealthy planters frequently travelled between their multiple estates. Compared to the Chesapeake, livestock in the Lowcountry was husbanded in a more passive manner; working animals were corralled while some of the non-working livestock ranged freely in the woodlands in their natural herd structures. In both regions, interactions between humans and animals combined with the physicality of the plantations to create landscapes of domination and resistance. In the Chesapeake, planters depended on working livestock to increase their wealth and to symbolize that wealth to others. In the Lowcountry, livestock represented large landholdings, and planters used horses to symbolize their mobility and active involvement in those landholdings. In both regions, enslaved laborers relied on working livestock to increase their mobility and their standing within the enslaved community. Additionally, enslaved individuals worked with animals to subvert the social order of the day through active and passive revolt. Rather than being static members in the background of human activity, working oxen and equines actively contributed to the economic, cultural, and social spheres of eighteenth-century plantation life.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

I am deeply indebted to all who have helped me along the journey of my dissertation research and writing. I wish to thank my advisor, Dr. Neil Norman, and my mentor, Dr. Joanne Bowen, for their unending patience and guidance through all stages of the research project. A huge amount of gratitude also goes to Dr. Marley Brown, Dr. Kathleen Bragdon, and Dr. Carter Hudgins for their reading and critique of the dissertation from its inception to its completion.

I wish to thank the numerous organizations, institutions, agencies, and other individuals which also have aided in the completion of this research. I am gracious to Drayton Hall, the National Trust for Historic Preservation, and the Wood Family Fellowship for granting me access to the collections of Drayton Hall and for providing funding for aspects of this research. Also to Sarah Stroud Clarke for assisting in accessing and interpreting the Drayton Hall materials. Thank you to the Maryland Archaeological Conservation Laboratory and the Gloria S. King Fellowship for access to the Oxon Hill Manor faunal collection and funding for the analysis. I wish to thank Martha Zierden and the Charleston Museum for access to the Stobo Plantation materials and the Mount Vernon Department of Archaeology for allowing me to analyze the materials from Mount Vernon. Also, thanks to Jamestown Rediscovery and the York County Historical Museum for allowing me to analyze the articulated horse skeletons. I also greatly appreciate the Colonial Williamsburg Foundation, Steve Atkins, and the volunteers of the CWF faunal lab for their undying support and assistance in all aspects of my research. Finally, I thank the College of William & Mary, the Department of Anthropology, and the Office of Graduate Studies and Research for supporting my research endeavors.

Last, but certainly not least, I thank my family for their eternal support of me and infinite patience with me as I completed this dissertation. To my husband, Joe, thank you for always lending a listening ear and for reading draft upon draft of seemingly everything I have ever written. To my parents, James and Jody, for shaping me into the person that I am today. And to my sister and her family, for being just a Skype or phone call away. Lastly, to my extended family, the anthropology graduate students, for venturing with me on this journey.

LIST OF TABLES

LIST OF FIGURES

Chapter 1. Introduction

Animals are a fundamental component of our everyday lives. From the Golden Retriever wagging his tail as he greets you at the door to the black bear who has visited your bird feeder every night for the past week, animals are as much a part of our world as we are a part of theirs. In this interweaving of human and animal worlds, animals can provide companionship, nourishment, annoyance, a sense of identity, you name it. Often a single animal will occupy multiple niches simultaneously. The American Bison, for example, has long served as a symbol of the American West and recently was named the national mammal, yet is easily found on dinner menus across the country; this cultural icon fills a social category of American identity whilst at the same time filling a nutritive category of animal protein. Yet, when theorizing about animals in past worlds, archaeologists are less apt to accept that animals fulfilled multiple positions concurrently; animals are judged as either strictly symbolic constituents of human life or they are rendered nondescript components of the economic system. When faced with a faunal assemblage, most zooarchaeologists opt for the economic route, interpreting animals as only supplying past peoples with calories and capital.

However, this dissertation embraces the fact that in past societies, just as they do today, animals acted at once in multiple spheres of human life. This entwining of human and animal worlds results in what this dissertation terms the animal landscape. Across, within, and through the animal landscape, human-animal interactions reveal social, cultural, and economic relations within the human realm. As Arbuckle and McCarty's

(2014b:1) volume showcases, the "supranutritional roles of animals" are often integrated into the "economic, social, political, and religious spheres of life." To explore this integration of human and animal worlds, this dissertation builds on works which look beyond solely the economics of animals, theorizing animals in past societies in terms of broader concepts such as foodways, cuisine, and cultural interaction (Bowen 1994, 1996; Landon 2005; Milne and Crabtree 2000, 2001; Reitz and Ruff 1994; Zierden and Reitz 2009). These studies continue to emphasize the dietary contributions which non-human animals made to past societies, but they represent a crucial step towards acknowledging animals as more than merely "protein and calories" (Russell 2012:7).

This dissertation furthers such studies by examining working animals' participation in two oft-overlooked yet inextricably linked roles on eighteenth-century plantations in British North America: that as beasts of burden and that as social instruments (Russell 2012). As beasts of burden, colonial equines and oxen were equal partners with humans in their husbandry and experienced more daily contact with humans than most other livestock. Consequently, plantation residents, both free and enslaved, used their affiliations with working animals—specifically as symbols of power—in interactions and negotiations within the plantation landscape (e.g., Wells 1993). Thus, this research abolishes the "either/or" mentality of previous zooarchaeological studies, bridging the study of both the symbolism of working animals and the study of the husbandry of these animals. This bridging is possible through an animal landscape approach, which focuses on the interactions between humans and animals rather than the sole influence of one over the other, a common theme in most studies of animal husbandry which will be countered in a later chapter.

In the animal landscape approach, working animals are not merely static characters in the background of human activity; they are a part of and contribute to that human activity predicated on thousands of years of co-evolution between humans and domestic animals. As Zeder (2012a:165) states, “Domestication also leaves its mark on the human side of the equation. There is growing evidence that humans, like their domestic partners, have experienced reciprocal genotypic responses to domestication. However, the most significant and distinctive impacts of domestication on humans are cultural.” By exploring working animals as beasts of burden, this dissertation addresses how working animals shaped the physicality of the plantation landscape, both through their labors and through their daily interactions with plantation residents vis-à-vis the husbandry strategies in which these working animals partook. Working animals have different dietary and social requirements than their non-working counterparts, requiring additional feeding, training, and maintenance of that training. In this way, working animals dictate that certain crops be grown for adequate fodder and that fences and pens be adequately positioned on the plantation to facilitate the use of these animals’ labors, all clearly influencing the physical layout of the plantation and how people and animals moved about and interacted on the plantation. Secondly, this dissertation explores working animals as social instruments on eighteenth-century plantations and the attempts to bolster or undermine social hierarchies through interactions with working animals. For example, a 1714 South Carolina law dictated that enslaved individuals could not own horses, but, through the last quarter of the eighteenth century, enslaved individuals held onto their claims to horses because horses were obvious symbols of mobility and possessing them challenged the symbolism connecting the horse with white male mastery (Morgan 1998:373).

At its core, this dissertation seeks to parse out the similarities and differences between eighteenth-century plantations in the Chesapeake and those in the Lowcountry in terms of the animal landscape, or the intersections between and integrations of the human and the animal realm. In this way, animals are made an integral element of the eighteenth-century world and are recognized through their participation in concurrent social, economic, and cultural roles on plantations, thereby breaking the mold of relegating animals to simply "protein and calories."

Different Sides of the Same Coin: The Chesapeake and Lowcountry as Viable Comparisons

As part of the British colonial enterprise, the eighteenth-century Chesapeake and Lowcountry represent unique regions that were both part of the same British Atlantic world. The Chesapeake is the region of colonial British settlement along the tidal river basins of Virginia and Maryland which drain into the Chesapeake Bay. The Lowcountry is an approximately 500 mile stretch of coastal land from North Carolina's Lower Cape Fear south into East Florida (Edelson 2007:385). These two regions offer ideal settings in which to explore the roles laboring animals played in everyday life and how these roles contributed to the unique physical and social landscapes of plantations in both regions because of their different, but well-documented, economic, social, and cultural histories. The Plantation South, as a whole, has long been of interest to historians and archaeologists (Gray 1933; Greene 2007; Jones 1957; Orser 1990; Singleton 1990). The decades of research conducted on the Plantation South provide a solid base of evidence from which to investigate the economic histories of locales within the area. Such comprehensive studies also provide a foundation on which to build studies of less-researched aspects of the region, such as the integration of working oxen and equines into the economic, cultural, and social spheres of plantation residents.

The British Atlantic serves as a proving ground for comparative archaeological studies. James Deetz (1996) interwove numerous classes of material culture from sites within Virginia and New England in his definitive *In Small Things Forgotten*. In studying the archaeology of slavery in North America, comparisons of different colonies and, later, states are commonplace (e.g., Samford 1996; Singleton 1995). In the field of historical zooarchaeology, comparative approaches are quite common amongst sites within various regions, such as the American Southeast (e.g., Reitz 1986) or the Chesapeake (e.g., Walsh et al. 1997). Joanne Bowen and Michael Jarvis (1994) conducted an explicitly regional comparative study, exploring the similarities and differences amongst the provisioning systems of British colonies in New England, the Chesapeake, and Bermuda. Bowen (1994) also conducted a focused study on the herding systems in British North America, comparing New England and Chesapeake husbandry. Most regional comparisons in historical zooarcheology, however, are simply made in passing in studies of one specific region. For example, Zierden and Reitz (2009:334) briefly mention trends in the consumption of wildlife in New England and the

Chesapeake as a means of solidifying their claim that eighteenth-century Lowcountry cuisine is marked by an abundance of wild fauna. As part of this project, this dissertation adds zooarchaeological evidence aimed at explicitly examining inter-regional differences and similarities. This study represents the first overt zooarchaeological comparison of the Chesapeake and the Lowcountry and one of the few works directly comparing the two regions, taking as a model Morgan's (1998) classic work, *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake and Lowcountry*.

Zooarchaeological comparisons of the Chesapeake and Lowcountry hold the potential to illuminate further underlying and unexplored facets of these dissimilar regions which occupied the same British colonial world. As Philip Morgan (1998:xvi) writes, "[The Chesapeake and Lowcountry] are not so dissimilar that comparison is fruitless. Rather, each society looks different in the light of the other; and our understanding of each is enlarged by knowledge of the other." As opposed to other regions in British colonial North America, namely New England, both the Chesapeake and the Lowcountry relied heavily on the labors of enslaved Africans for the production of cash crops. As meeting places for multiple cultures, classes, and legal statuses, the Chesapeake and Lowcountry are prime locations for studying the power negotiations present in everyday situations.

Additionally, the Lowcountry and the Chesapeake represent regions where plantation agriculture was common throughout the eighteenth century. Plenty of other areas in the British New World also depended on plantation agriculture; each plantation in each region of the British New World had its own unique historical, cultural, and social underpinnings. However, by limiting this dissertation to the eighteenth-century

Chesapeake and Lowcountry, it explicitly addresses plantation life in regions where the plantation systems were fully formed and where the environments and natural settings are unique to the regions but not so disparate as to preclude comparisons. Studying regions with a relatively well-developed plantation system in each prevents major temporal differences from clouding interpretations. Similarly, the Chesapeake and Lowcountry are both located in the humid subtropical climate zone, meaning that the number of ecological variables within the plantation landscapes of the two regions are noticeable but not overwhelming. The simultaneous differences and similarities between the natural flora and fauna of the Chesapeake and the Lowcountry lend themselves well to a comparative study of the plantation landscape as a whole and the husbandry of animals within that landscape. Such a comparison would not be as balanced if one were to study, for example, the working animals of the Chesapeake and the British Caribbean.

Thus, the eighteenth-century Chesapeake and Lowcountry represent regions which were both part of the larger British colonial enterprise in North America with enough general similarities so as to not prevent scholarly comparisons. This is not to say that there were not intra-regional differences in both the Chesapeake and the Lowcountry. Rather, this dissertation embraces the uniqueness of each plantation and the varying natural environments which contributed to the overall plantation landscapes of each region. Morgan (1998) also acknowledges intra-regional differences in both the Chesapeake and the Lowcountry. Similar to Morgan (1998), this dissertation takes such intra-regional differences into account when appropriate but focuses on the inter-regional differences over the intra-regional ones. In the Lowcountry, these differences are predominately oriented on an east-west axis, with the natural environments and plantations changing as one moves inland from the coast. In the Chesapeake, these differences are predominately oriented on a north-south axis. Because of the sites chosen in this study, as shall be discussed below, these intra-regional differences are most obvious in this dissertation in the Chesapeake, with differences in the cultural, economic, and social spheres of the Upper Chesapeake and the Lower Chesapeake (e.g., Walsh 2010), owing to the prolonged settlement history of the region and differences in the growing capabilities of the various soil types. Let us now turn to the sites to be examined in this dissertation, exploring how the datasets assessed in this research reveal the incorporation of working animals into the social, economic, and cultural spheres of eighteenth-century Chesapeake and Lowcountry plantations.

The Sites under Scrutiny

This dissertation sets out to compare the husbandry and symbolism surrounding working animals on eighteenth-century plantations within the Chesapeake and the Lowcountry. Accomplishing this, like any comparative analysis, requires the incorporation of data from various sites within each region. Sites for this dissertation were selected based on their contemporaneity and the availability of the faunal assemblages for analysis. Chesapeake sites used in this research are Mount Vernon, Virginia; Oxon Hill, Maryland; Jamestown Island, Virginia; and Yorktown, Virginia.

Lowcountry sites in this dissertation include Drayton Hall, South Carolina, and Stobo Plantation, South Carolina (Figure 1).

Mount Vernon and Oxon Hill Manor represent eighteenth-century Upper Chesapeake plantations, whereas Drayton Hall and Stobo Plantation represent eighteenth-century outer coastal plain Lowcountry plantations. As discussed in the methodology chapter, Chapter 4, the probate records from the Chesapeake and Lowcountry also represent predominately Upper Chesapeake and outer coastal plain plantations, respectively, thereby providing analogous datasets which can each inform the interpretation of the other. Jamestown Island and Yorktown, Virginia, each provide an articulated equine skeleton. As these two sites are clearly within the Lower Chesapeake region (Figure 1), they offer the opportunity to discuss horses' contributions to the plantation landscape in this subregion. These skeletons, therefore, serve as case studies in the equine animal landscape of the late-eighteenth-century Lower Chesapeake.

Mount Vernon, the iconic home to the United States' first President and to some of the earliest efforts in plantation archaeology (Singleton 1990:70), serves as an anchor for this study. Washington was a local innovator in Chesapeake agriculture, being a relatively early adopter of focused grain production and conducting agricultural experiments throughout his tenure as a gentleman farmer (Dodge 1932:22-24; Papers of George Washington Digital Edition [PGWDE] 1785). By 1766, Washington had switched from tobacco to mixed grain cultivation and started incorporating more diverse industries such as fishing, milling, textile production, and distillation at Mount Vernon in an attempt to make the plantation more self-sufficient, marking a more abrupt transition away from tobacco production than most of his contemporary Upper Chesapeake planters

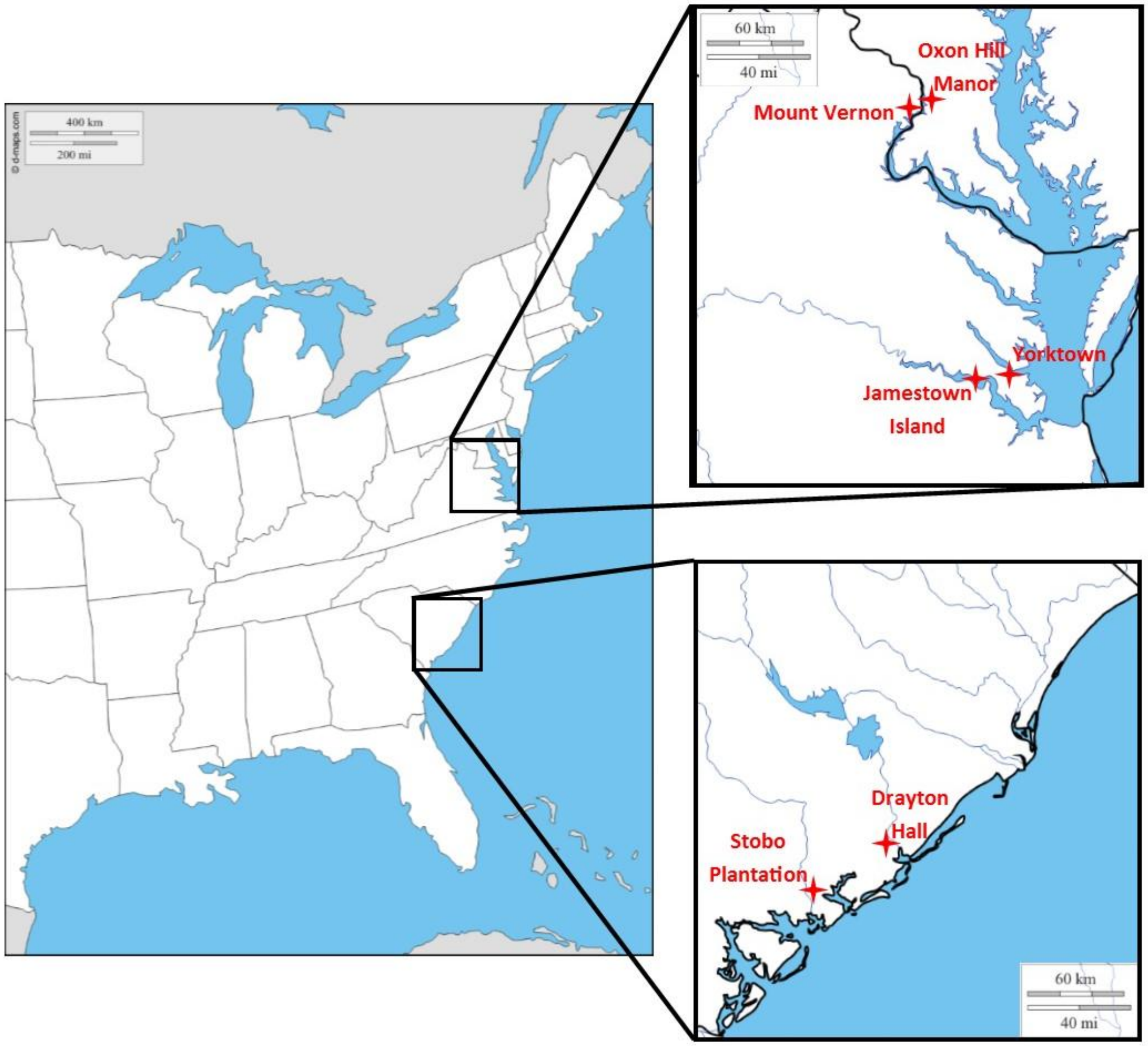


Figure 1. Map of the sites which provided zooarchaeological materials used in this dissertation.

(Fusonie and Fusonie 1998:37-49; Lee 2006:3; Pogue 1994:103; Pogue 2002:5-6). Twenty-one years later, Washington increased the total acreage of Mount Vernon to nearly eight thousand, which was divided into five interrelated farms each equipped with dwellings for the overseers, cabins for enslaved laborers, stabling and pens for livestock, and barns for storing grain and hay (Dodge 1932:36; Fusonie and Fusonie 1998:6; Pogue 2005:436). These farms enabled Washington to produce grains, sheep, hogs, cattle, horses, and mules until his death in 1799. The archaeological collections of Mount Vernon permit the comparison of enslaved and elite assemblages. Additionally, the documentary record associated with Mount Vernon is perhaps the most complete of any eighteenth-century plantation site in North America, allowing for extensive historical research into the many niches in which working equines and oxen participated in the eighteenth-century Chesapeake.

Across the Potomac River into Maryland, Oxon Hill Manor was also home to an elite upper-class planting family, the Addisons. For the majority of the eighteenth century, Oxon Hill Manor was a tobacco-producing plantation like many of its neighboring Upper Chesapeake plantations. However, by the last quarter of the eighteenth century, Oxon Hill Manor had become more self-sufficient and diversified, giving the estate the ability to stay economically viable during times of low tobacco prices and to increase grain as well as livestock production. In addition to growing tobacco and producing goods for use on the plantation, Oxon Hill Manor produced hogs, cattle, horses, and sheep until it was sold to Zacariah Berry in 1810 (McWatters 1986:74-80; Wheaton 1986:1-3). The rich archaeological collections from Oxon Hill Manor provided unprecedented numbers of faunal remains used in this research. Additionally, the temporal, geographic, and agricultural similarity between Oxon Hill Manor and Mount Vernon allow for a thorough investigation of the changing husbandry strategies and uses of working animals in power negotiations as Upper Chesapeake plantations completed the eighteenth-century transition from tobacco-focused to grain-focused agricultural production. The probate records from plantations within the Upper Chesapeake further illuminate the shifting husbandry and social importance of working animals as planters in the region changed the ways they thought about and practiced more diversified agriculture as the century progressed.

Jamestown Island and Yorktown are key to this dissertation in that they each supply a single articulated horse skeleton. Equine remains are extremely rare in the archaeological records of both Upper and Lower Chesapeake plantations. Therefore, these two skeletons serve as case studies into the economic, social, and symbolic relationships between people and horses in the eighteenth-century Lower Chesapeake. Compared to the Upper Chesapeake, this region clung more tightly to tobacco production but was also shifting to more diversified agriculture. The late-eighteenth-century Jamestown Island horse skeleton comes from a time when the island was primarily farmland owned by two families (McCartney 2000a, 2000b), providing a direct line of comparable evidence to the zooarchaeological and historical evidence from the Upper Chesapeake. The horse skeleton from Yorktown also dates to the late-eighteenth century but was likely a casualty of the 1781 siege of Yorktown. Both horses come from time periods and locations in which slaves, planters, and soldiers occupied the area, providing a model setting in which to explore the numerous roles equines played in colonial Chesapeake society.

As for the Lowcountry dataset, this dissertation addresses equine and cattle remains from Drayton Hall and Stobo Plantation. Nine miles northwest of Charleston, on the banks of the Ashley River, lies Drayton Hall, home of the affluent Lowcountry planting family, the Draytons. Before John Drayton purchased the land in 1738, multiple individuals had owned the land with Francis Yonge likely building the first structure on the property (Zierden and Anthony 2008:9). Like many Lowcountry families, the Draytons made their initial wealth through cattle ranching but in the early eighteenth century transitioned from ranching to planting (Lewis 1978:10). This transition shifted the types of interactions the Draytons and their enslaved laborers had with animals on their vast landholdings. Family accounts suggest that commercial crop production was not a priority at Drayton Hall. However, at some point in its history, rice was grown on the estate as the remnants of the marshes and fields laid out in the eighteenth century for growing rice are still visible on the north side of the narrow tract along the Ashley River. Additionally, Charles Drayton's 1790s sketch of the property shows an extensive system of fields, dikes, and ditches for growing rice (Zierden and Anthony 2008:7-8). Rice and other provision crops grown at Drayton Hall may have been used primarily to feed the plantation residents, as accounts of the property indicate that Drayton Hall's eighteenth-century function was primarily as the country seat and business hub of the extensive Drayton family holdings (Lewis 1978:10-11; Zierden and Anthony 2008:1,9). Through analyses of faunal remains from both the Pre-Drayton and the Drayton family occupation of the estate, this dissertation is able to explore temporal changes in animal husbandry in the Lowcountry, especially as it pertains to the regional move from livestock production to rice production around the second quarter of the eighteenth century.

In contrast to Drayton Hall, Stobo Plantation, which lies on the Edisto River near Willtown, South Carolina, was primarily a rice- and indigo-producing plantation. The chronology of the ownership of the plantation is rather complicated, but it seems clear that in 1741, James Stobo purchased the tract of land, contributing to his roughly 4,400 total acres of land which he used to grow rice and indigo (Zierden et al. 1999:133). The plantation stayed in the Stobo family until 1785 and, for yet unknown reasons, was abandoned sometime before 1800 (Webber and Reitz 1999:4-5). As a rice- and indigo-producing Lowcountry plantation, Stobo Plantation sheds light on whether or not oxen and horses plowed and transported goods in Lowcountry rice production, a topic upon which historians (Carney 1996; Carney 2001; Garrett 1998; Littlefield 1991; Morgan 1998) do not readily agree. Additionally, as both the Draytons and the Stobos were wealthy, influential planting families, the archaeological and historical evidence from each plantation can further our understandings of interpersonal relationships on Lowcountry plantations and how working animals contributed to those interpersonal relationships. Furthermore, the probate records from other plantations within the Lowcountry's outer coastal plain illuminate the nuanced characteristics of individual Lowcountry plantations and the animal landscapes within those individual plantations.

While Jamestown Island and Yorktown, Virginia, provide important material for case studies into the roles of horses in the Chesapeake, the other four sites in this dissertation represent successful plantation enterprises in the eighteenth-century Chesapeake and Lowcountry. The extensive archaeological investigations at each of these plantations and the rich historical records from each region allow for comparisons between and within the Lowcountry and the Chesapeake. Such comparisons can illuminate the similarities and differences amongst the sites in terms of the working animals present there, how these animals affected the physicality of the plantation through their labor and husbandry, and how these animals were integrated into the social sphere of the human residents of these plantations.

Working Animals as Keys to Unlocking the Human-Animal Relationship

Landscapes are complex social arenas in which people, plants, animals, landforms, and human-made structures interact (e.g., Delle 1998; Terrell et al. 2003). As John Creese (2011:4) writes, "landscape emerges through the ongoing interrelations of entities (be they human or non-human)." As elements of the plantation landscape, interrelations between humans and animals were omnipresent on eighteenth-century Chesapeake and Lowcountry plantations, and people's interrelations with animals were subsumed into their exchanges with one another. Thus, any species, class, or general classification of animal could be the focus of an animal landscape approach. However, because this dissertation actively sets out to study animals' involvement in *both* their husbandry *and* their incorporation into the human social realm, it relies on animals that are actively engaged in a relationship of production and maintenance with humans. Therefore, the animal landscape approach in this dissertation seeks out these specific interrelations between humans and domesticated animals.

Working mules, horses, and oxen represent domesticated species. Whether one defines a domestic animal as "one that has been bred in captivity for purposes of economic profit to a human community that maintains total control over its breeding, organization of territory, and food supply" (Clutton-Brock 1999:32) or as "the objects or vehicles of relations between human individuals and households" (Russell 2002:291), one cannot help but see that in domestication, both humans and animals are integral to the process. An essential component to this process is husbandry, or the practices in place when raising animals. Thus, to study the husbandry aspect of the human-animal relationship, domesticated, or at least tamed, animals are necessary.

To study the integration of animals into the social realm of humans, any species of animal can be the focus of study. Volumes have been written on the symbolic role of animals in archaeology (Ryan and Crabtree 1995; Willis 1990). Chapters in these books cover topics such as: animals in artistic representations (Jackson 1990; LeMoine et al. 1995; Levy 1995; Shepherd 1995), in human burial contexts (Crabtree 1995), as changing symbols through time (Reitz 1995), and as sacrifices to the gods (Klenck 1995). Additional anthropological works on the symbolic nature of animals in past societies explore animals as elements of cosmology (Bahti 1990; Klenck 1995; MacDonald 1995; Schwabe 1994; Szynkiewicz 1990), as figures in mythology (d'Anglure 1990; Osborn 1990; Shanklin 1990; Shepherd 1995), and as key players in folklore (Handoo 1990). Works such as these rely on multiple lines of evidence from material culture, written records, and oral history.

One can see that animals have been studied extensively as they relate to past symbolic structures and cosmologies. Animals have even been studied in relation to displays of status and power. In Sørensen's (2007:159, 177-179) study of animal portraiture, she notes that elites used menageries of living animals to symbolize their wealth and power and commissioned portraits of themselves positioned with horses and dogs as these species were equated with wealth and power in art. Cohen (1994) writes that in medieval Europe, people not only used animals to symbolize power, but used the animals or parts of the animals to infuse themselves with the animals' power, such as carrying the comb of a cock into battle to instill themselves with bravery.

Such studies evidence the use of animals as symbols of power and wealth in the past, but they only appreciate the animals as such symbols. In contrast, this dissertation explores how animals participated in multiple roles on the plantation simultaneously. Working animals, or those which provided a service to the plantation, are privileged over those animals which provided a product, such as meat, wool, or milk. This is because working animals have largely been overlooked in the North American zooarchaeological record in favor of those animals kept for meat, or in some instances wool, production. Furthermore, as domesticated animals, working equines and bovines have a very long history of co-evolution with humans (Budiansky 1992; O'Connor 1997; Zeder 2012a, 2012b). Through appreciating these millennia-long co-evolutions, one can probe the process of integrating animals into the human worldview to a greater extent than is possible with some wild animals. Additionally, the methodologies for identifying working animals are relatively new. By assessing work-related pathologies and osteometrics of cattle lower limb bones, this dissertation identifies the presence of working oxen in the zooarchaeological record, a practice which was developed in and is still practiced primarily in Old World zooarchaeology (Bartosiewicz 1987; Bartosiewicz et al. 1997; Cupere et al. 2000; Higham 1969a). As such, this dissertation assesses the multiple roles of working animals as a means to bring novel methods to the fore of zooarchaeological studies of North America.

Moreover, the nature of working animals on eighteenth-century plantations place them in an ideal position from which to study these multiple levels of human-animal interactions in the Chesapeake and Lowcountry. As working animals, working equines and oxen interacted with people more regularly than did those animals kept only for products. Initial training brought together the drovers, wagoners, or other trainers with horses, mules, and oxen. This training established the relationship of dominance which is essential when working with large animals (Conroy 2007). Once trained, it was not just the carters, wagoners, plow-men or plow-women that continued to interact with such animals. Rather, because the animals provided services to the plantation and did so on a regular basis, these animals would have had a different physical position on the plantation landscape than those animals kept for their products. Their positions on the plantation likely changed through time and with the seasons but in these varying positions, they would have to be kept relatively close at hand, able to provide labor whenever needed. Thus, working animals were likely kept closer to loci of activities than the other animals. This proximity to activity means that every individual passing through the plantation grounds, whether free or enslaved, male or female, rich, middling, or poor, would have the potential to interact with working animals on a regular basis, even if it was just a visual interaction. Furthermore, their close working relationships with individuals and close physical proximity to all plantation residents contributes to their inclusion in a variety of historical documents, including maps showing the physical placement of the animals, personal writings hinting at the roles these animals played in negotiations of power, and probate inventories indicating how these animals were raised. The inclusion of multiple lines of evidence is common and, at times, even demanded in landscape studies. By incorporating archaeological and historical evidence, this dissertation is able to embrace such a landscape approach to the intersection of human and animal lives.

Working animals are able to tack between the social and sustenance spheres of human existence, between humanity and husbandry. As domestic animals, working horses, mules, and oxen influenced the husbandry strategies employed to raise them and provided services vital to the operation of the plantation. Their prominent positions on the plantation landscape meant that all plantation residents would have the potential to use their interactions with working animals in their own interpersonal relations. It can be argued that through provisioning, meat animals were also engaged in relationships of husbandry and symbolism with all plantation residents. However, by studying working animals on eighteenth-century plantations this dissertation is able to solidly avoid the "protein and calories" mindtrap and to explore and test new methodologies in zooarchaeology, being the first study to use such methods on assemblages from British colonial North America.

Looking Ahead

Assessing the multiple roles an animal can fill in the lives of eighteenth-century plantation residents in different regions relies on appropriate sites, assemblages, and datasets. The eighteenth-century Chesapeake and Lowcountry allow for a valid regionally-comparative study because the differences between—and, to an extent, within—the two regions allow for a full appreciation of each region individually. Yet, these inter-regional differences are not so great as to render the regions incomparable. Select plantation sites in each of the regions provide the extensive archaeological and historical records necessary to adequately assess the working lives of equines and oxen and the ways in which those working animals factored into the social realm of humans. Finally, the introduction of novel methodologies, the unique placement of working animals on the plantation landscape, and the role of working animals in their own husbandry place working animals in an ideal situation for studying the nuances of the intersections of human and animal lives on the plantation landscape.

In the following pages, this dissertation will do just that, exploring how working animals were components and co-constructors of the physical and social landscapes of eighteenth-century plantations. To do so, this dissertation espouses an animal landscape approach. The chapter following this introduction expands upon the primer to the approach provided here. The theoretical basis of the animal landscape approach is Russell's (2012) social zooarchaeological approach and Budiansky's (1992) and O'Connor's (1997) co-evolutionary approaches. This fusion utilizes tenets of practice theory while allowing both humans and animals to act as agents. Therefore, as Anderson (2004) argues, animals in the past are not just part of the scenery but are themselves historical actors. This acknowledgement of animal as well as human agency allows a deeper exploration of the intricacies of human-animal interaction. A complete understanding of human-animal interaction is necessary to appreciate the integration of animals into the social, cultural, and economic spheres of human life.

The third and fourth chapters of this dissertation delve into the where and how the animal landscape approach is applied. Through detailing the historical background of the Chesapeake and the Lowcountry, Chapter 3 provides the agricultural, cultural, and social backdrop against which these intersections of human and animal worlds occurred. In contrast, the fourth chapter addresses the methodologies utilized in this research. This dissertation relies heavily on evidence from the zooarchaeological, archaeological, and historical records. By utilizing multiple lines of evidence, the inherent biases and ambiguities in each dataset are exposed and interpreted. Discussions in this chapter include identifying plantations in the historical record, identifying working animals in the zooarchaeological and historical records, and identifying the integration of animals into the plantation landscape through their husbandry and their incorporation into the social landscape.

The results of these analyses are presented in the remaining chapters of the dissertation. First, this dissertation discusses the working lives of oxen and equines, presenting the results of the historical and zooarchaeological investigations into the ubiquity (or lack thereof) of working animals on eighteenth-century plantations in the Upper Chesapeake and the Lowcountry. The two chapters devoted to the working lives of oxen and equines frame the results within the animal landscape approach, exploring how the animals themselves, through their biologies and behaviors, influenced the labors they were most likely to perform in each region. Because of the relative scarcity of equine remains in plantation assemblages, the chapter on working equines (Chapter 6) also includes the results of the analysis of the Yorktown and Jamestown horses, two articulated skeletons which serve as case studies for examining working horses from their skeletal remains.

Following a discussion of the working lives of animals, this dissertation probes the interlacing of human and animal lives on eighteenth-century Chesapeake and Lowcountry plantations. Chapter 7 examines the husbandry of working animals in the two regions, including an emphasis on how working oxen and equines were active agents in their husbandry. Just as a landscape is comprised of "the ongoing interrelations of entities (be they human or non-human)" (Creese 2011:4), so too is a successful husbandry strategy comprised of interrelations and partnerships amongst the humans, animals, and natural environments involved. Furthermore, this chapter promotes conversation regarding the current understanding and use of the term husbandry, suggesting that zooarchaeologists are clear in their usage and definition of husbandry, as the term is used throughout the discipline but rarely defined.

The final aspect of the animal landscape of eighteenth-century Chesapeake and Lowcountry plantations to be explored in this dissertation is the integration of working animals into the social realms of human life. In Chapter 8, this research exposes how the placement of working animals on the physical landscape of the plantation and the material culture associated with working animals contributed to the ideology of the social hierarchy of the plantation and how enslaved individuals undermined this ideology through their own interactions with working animals. In a similar vein, this chapter also explores laws, especially sumptuary laws, which mandated the types of interactions that were allowed between different classes of people and working animals. Through analyses of both codified and clandestine interactions between people and working animals, this dissertation is able to expose the animal landscapes of eighteenth-century plantations and, thus, to uncover the interactions amongst multiple classes of people and animals that allowed life to simply go on (Silliman 2001) during the height of British colonialism in North America.

Chapter 2: Animal Landscapes in Historical Archaeology

The study of animals in the social sciences has proliferated in recent years likely as part of what many have termed the "animal turn" (e.g., Swart 2003). As part of this intellectual shift, social scientists, including anthropologists and archaeologists, increasingly explore the multifaceted spaces which animals occupy in human society and the varied intersections of human and animal lives (Swart 2003). As Molly Mullin writes,

> …anthropologists investigating human beings and their relationships with one another have continued to find it especially useful to analyze humans' relationships with animals, including the meanings assigned to animals, ways of classifying them, and ways of using them—whether as food, stores of value, commodities, signs, scapegoats, or stand-in humans. [Mullin 1999:207]

The animal landscape approach developed in this dissertation does just this: assessing human relationships and negotiations through the interactions between humans and animals on eighteenth-century plantations. Partially subsumed under the umbrella of the "animal turn," an animal landscape approach explores the physical and social landscape, drawing heavily from Russell's (2012) social zooarchaeological approach and Budiansky's (1992) and O'Connor's (1997) co-evolutionary approaches. Such a synthesis emphasizes the symbolic and social functions of animals on the landscape while acknowledging animals' active participation in these functions and in their own husbandry.

Approaches aimed at studying the interactions and interrelationships between humans and animals, such as the animal landscape approach, are largely founded in broader studies of historical ecology. Historical ecological studies examine the relationships between human societies and the local environment, with the environment adapting to meet humans' needs and desires based on the sociocultural and political systems present (Balée 2006; Balée and Erickson 2006). The animal landscape approach builds upon this desire to understand the interactions between humans and the environment but acknowledges that humans are not the only force behind change and adaptation. Similarly, Bowen (1999; 2009; 2017) demonstrates that both colonists and livestock modified the landscape of the seventeenth-century Chesapeake to create a successful system of animal husbandry based on free-ranging livestock and tobacco cultivation.

In historical ecology, a landscape is "a place of interaction with a temporal dimension that is as historical and cultural as it is evolutionary per se, if not more so, upon which past events have been inscribed, sometimes subtly, on the land" (Balée 2006:77). Plantations were complex landscapes wherein people, plants, animals, landforms, and human-made structures interacted (e.g., Anschuetz et al. 2001; Delle 1998; Norman 2014; Terrell et al. 2003; Wells 1993). Following Creese's (2011:4) definition of a landscape as "the ongoing interrelations of entities (be they human or non-human)…,” the animal landscape approach embraces those *interrelations* of humans and animals. Only by recognizing the active roles of both humans *and* animals and the mutual relationships that occur amongst those of different species can one truly understand and appreciate how the animals themselves influenced not only their husbandry and management in varied environments but also their integration into the social world of humans.

Domestication is one such well-studied interrelation which can occur between humans and animals. Borrowing from Zeder (2012a, 2012b), Budiansky (1992), and O’Connor (1997), the animal landscape approach sees domestication as a co-evolution between humans and animals in which both parties contribute to the relationship and are henceforward affected by the relationship. Unlike taming, which occurs at the level of the individual, domestication occurs at the population level and is a multi-generational co-evolution between human and animal. Taming is not necessarily even the first stage in the process of domestication, although it is often an effect of domestication (Hemmer 1990:155-156; Zeder 2012b:231-239; *contra* Clutton-Brock 1999). Thus, the relationship between the eighteenth-century drover and the oxen was much more than just tame cattle responding to cues; it was the insertion of the drover into the dominance hierarchy of the cattle and a mutual understanding amongst all parties involved predicated on thousands of years following evolution together (e.g., Conroy 2007). Rather than humans having “complete mastery” (Clutton-Brock 1994:26) over nearly every aspect of a domesticated animal’s life, both animals and humans influenced the pathways taken to domestication and the subsequent raising and occupations of these domesticated animals. Zeder (2012a, 2012b) states that both the natural behaviors of animals and their utility towards humans influenced how those animals were initially domesticated (see also, Marshall and Weissbrod 2011). Generations later, the natural behaviors and biologies of these animals were still crucial to eighteenth-century views of these animals, the practices of raising and maintaining these animals, the ways in which these animals labored on plantations (i.e., Ingold 1980), and how these animals and their labors provided symbolic capital and animal wealth to the residents of Chesapeake and Lowcountry plantations (Russell 2012:297-357).

Stephen Budiansky (1992) and Terry O'Connor (1997) speak directly to the agency of animals in domestication. Budiansky (1992) identifies domestication as a co-evolution between two species cooperating for survival. This approach relies heavily on understanding the biology and behavior of the species involved to recognize the process of co-evolution. For example, Budiansky (1992:51-52) writes that the Saami people and reindeer both contribute equally to the Lapp herding system. Wild reindeer follow the Saami to consume the much-needed salt found in human urine, and the Saami follow the wild reindeer herds as a source of food. Recently, the humans and some reindeer have co-evolved, with domestic reindeer providing dairy, draft, and personal transportation for the Saami. The Saami now rely heavily on both domestic and wild reindeer, recognizing the stark distinctions between the two herds. O'Connor (1997) also sees domestication as a co-evolution, but posits that this co-evolution is simply a stage beyond the commensal and mutualistic relationships observed between different animal species in which both parties benefit. As such, Russell (2002) classifies O'Connor's (1997) approach as a "symbiotic" approach to domestication.

By the time colonizing humans and livestock arrived in the New World, horses and oxen had been domesticated for thousands of years. Yet, the forces of domesticatory co-evolution still played a crucial role in the establishment of successful husbandry systems. In placing humans and livestock in a new environment, both had to re-establish a mutualistic relationship in which both benefitted. Terrell et al. (2003) refer to this process as domesticating the landscape, and Bowen (2017) shows how the process began in the Lower Chesapeake in the 1620s with the colonists perfecting their system of simultaneous cash crop cultivation and livestock production. Throughout the Colonial South, evolution, or change in the genetic structure of a population, was minimally achieved through the practice of selective breeding in certain areas, such as in horse populations of the eighteenth-century Chesapeake (see, for example, WGS 1895). However, extreme selective breeding and the development of North American breed standards did not occur until well into the nineteenth century. Furthermore, domestic livestock in the eighteenth-century Chesapeake and Lowcountry retained large portions of their original herd structures, reproductive habits, and dietary regimes from their wild progenitors. Unlike some of our modern domesticated species, such as domestic turkeys which have been so selectively overbred that they cannot reproduce without artificial means, the livestock of the Colonial South were in a relationship with humans based on mutual understanding and respect rather than utter dependence for survival. Thus, the animal landscape approach is not overtly concerned with neo-evolutionary theories, just with understanding how past co-evolutionary relationships between domestic animals and humans inform our understanding of what both human and animal agents contributed to the landscapes of eighteenth-century plantations.

The emphasis on animal agency in anthropological and other social research is not new (Budiansky 1992; Griffith 2006; O'Connor 1997; Oma 2013; Swart 2003; Zeder 2012a, 2012b), but it is also not without its detractors. Clutton-Brock (1999:32), for example, defines a domestic animal as "one that is bred in captivity for purposes of economic profit to a human community that maintains total control over its breeding, organization of territory, and food supply." However, in terms of animal husbandry and the symbolic roles of animals within a society, it is hard to regard animals as having absolutely no influence.

The cowpen system of cattle husbandry in eighteenth-century South Carolina exemplifies the need to understand husbandry on both the animals' and the humans' terms. Under the South Carolina cowpen system, cattle were raised on open-range ranches run by enslaved laborers (Sluyter 2012:6). Cattle foraged freely on the coarse grasses of the piney woods or the open savannas in warm-weather months and on the Spanish moss and hardy plants of the hardwood forests during the winter (Bartram and Harper 1942:32; Otto 1987:15-16). In the early years of cowpens, cattle only foraged during the day and were penned at night to protect them from woodland-dwelling predators such as wolves and bears, thereby showcasing the multiple species of animal which contribute to the interrelationship of animal husbandry. With the decline of predator populations in the eighteenth century (Otto 1987:16-20; Stewart 1991:5), ranchers let their cattle roam the unfenced tracts of land for weeks and months on end. However, the strategic depositing of salt and the practice of calf-penning brought cattle into contact with people on a regular basis (Jordan 1993:185), ensuring that the herds were not feral. Thus, the cowpen system was truly an interrelation amongst humans, animals, and plants. The dietary needs of the cattle, the seasonal availability of foodstuffs, and the presence or absence of predator species influenced how these cattle moved across the landscape. Cowpen keepers had to understand the biology and behavior of these cattle to conduct their regular round-ups for marking and marketing (Otto 1987:23). In such an interrelationship, cattle were active partners in their own husbandry, with humans working with the cattle's natural biology and instincts to ensure a successful system for raising livestock.

It may seem counterintuitive that working animals on eighteenth-century plantations were anything but under the "complete mastery" of their human riders and drivers. However, even as working animals, horses and oxen on eighteenth-century plantations were not simply instruments of labor; they were laborers themselves working of their own accord through their physicality and consciousness (Hribal 2003; Ingold 1983). Ingold (1983:4) holds that "the domestic animal in the service of [hu]man[s] constitutes labour itself rather than its instrument, and hence that the relationship between [hu]man and animal is in this case not a technical but a social one." The give and take between humans and working animals represents a social relationship. In the case of working animals, especially, humans need to understand the natural social structures of cattle and equines and insert themselves into the dominance hierarchy. While occupying this dominant position, the handler needs to foster a relationship of mutual respect with the working animal, acknowledging that the biological and behavioral needs of the animal must be met or the animal will misbehave or overpower the handler. If there is an unbalanced relationship, the resulting interactions can be of danger to both the animal and the handler as was seen in an ill-fated ox-training incident at Mount Vernon in 1790 in which an improperly trained steer broke his neck in the yoke (Mount Vernon Department of Archaeology [MVDA], Farm Combine Document, Farm Reports, 1790). Each trusts the other with its safety and well-being.

Taming and castration are both means of disrupting the natural social structure of cattle and horses and placing humans into a more dominant position. Taming reduces the natural flight distance of the animal while castration or ovariotomy creates a more even-tempered animal by disrupting the flow of hormones. Neither practice renders animals under the complete control of humans, as taming is predicated on the social relationship between human and animal and castration is a means of taming in particularly irritable animals. Through both processes, animals and humans enter a mutualistic relationship in which each understands and respects the wants, needs, and abilities of the other.

The natural behaviors and biology of equines and oxen also allowed these animals and their labors to structure human relations on eighteenth-century plantations. As non-ruminants, horses can extract only 70% of the energy from the same amount of food that bovines can (Budiansky 1997:15, 29, 31; Langdon 1986:159-160), meaning that they have to eat more and thereby making horses much more expensive to maintain than cattle. This simple biological fact contributes heavily to horses being symbols of wealth throughout the colonies and in other past societies. In ancient Greece, for example, the biological needs and physical conformation of different equid species made them more or less suitable for certain tasks and influenced their symbolic roles. Horses were more expensive to maintain than donkeys, were associated with specific cosmetic presentations, and were more readily incorporated into symbolic narratives of gender, class, and ethnicity (Griffith 2006). In Western Europe, the horse was long-used as a distinguisher of the ruling class from the ruled class. Seventeenth-century Dutch settlers of the Cape of Good Hope imported horses, thus verifying, in their eyes, Dutch dominance over the local Khoikhoi and San who did not own horses (Swart 2003). Along with narratives indicating animals' social roles, the deposition of animal remains themselves can indicate how deeply embedded into the social world a particular animal or animal species was, with deliberate burials of animals serving as perhaps the best indication of the rich social aspect of these animals' lives (Argent 2010; Marciniak and Pollard 2015:749; Morey 2006). As Morey (2006) notes, the deliberate burial of dogs across time and space evidences the unique and long-term relationship between humans and canines, placing dogs in a "friendship" with humans to a scale hardly ever seen between two other species.

The symbolic roles of animals in the past and the daily interactions between and amongst humans and animals in past societies place the animal landscape approach in line with practice theory, as symbols can be instruments of knowledge and domination (Bourdieu and Wacquant 1992:13-14; Douglas 1970:11-12), serving both to establish and to undermine power differentials. Nerissa Russell's (2012:9) social zooarchaeology draws heavily from practice theory, "focusing on the power relations enacted in social life." From this foundation in practice theory, Nerissa Russell (2002, 2012) espouses a social definition of domestication. Russell (2002:291) defines domestic animals as "the objects or vehicles of relations between human individuals and households." While Russell's definition does impart the importance of animals' symbolic and social roles in the past, it glosses over animals' active contributions to the plantation landscape. Thus, by combining Russell's (2012) social zooarchaeological approach with tenets of

Budiansky's (1992) and O'Connor's (1997) co-evolutionary approaches, the animal landscape approach acknowledges and appreciates the agency of animals in their interactions with humans—in terms of their biological and behavioral influences on their husbandry (ie., Ingold 1980)—as well as recognizes how animals play crucial roles in the interrelations and negotiations amongst humans—in terms of animals' placement within the social realm.

The relations of power and related inequalities found throughout eighteenth-century Lowcountry and Chesapeake plantations shaped daily practice, the plantation landscape, and the symbolic role of animals. Bourdieu's (1977) concept of daily practice lends itself well to studies of power, as it addresses the structures of domination in everyday life and individuals' use of social capital as a means to counter these structures. The archaeological record combined with the historical documents available from eighteenth-century Chesapeake and Lowcountry plantations enable one to assess the role of the individual in the past (e.g., Crabtree 2007). However, as Smith (2009) and Ortner (2001) have noted, a purely Bourdieuan theory of practice only allows for revolutionaries to work against those structures of domination and, thus, serve as agents of social change. The daily practices discussed in the eighth chapter of this dissertation evidence the presence of enslaved agents who undermined power structures through both passive and active means. As such, the animal landscape approach adheres more closely to Smith's (2009), Ortner's (2001), and Silliman's (2001) interpretation of practice theory, wherein agency occurs in multiple social registers and in all members of society. In the animal landscape approach, members of society are understood as both human and animal, as outlined earlier in animals' influence on their husbandry and their structuring of human relations.

Silliman (2001) indicates that agents act both with explicit intent on social change and also in ways that simply allow life to go on. In this way, agency was everywhere on the plantation landscape. Human agents certainly acted in both ways described by Silliman (2001). For example, in 1722, the South Carolina legislature made it illegal for enslaved individuals to own horses and cattle, as these two species could "further insurrectionary plots by enabling the slave to travel and convey 'intelligences'" (Higginbotham 1980:173). However, enslaved individuals maintained their possession of horses well into the last quarter of the eighteenth century, perhaps as an overt challenge to the discriminatory legislation which had become a normalized ideology across the Lowcountry. These sumptuary laws were just one more means of relegating enslaved individuals to a subordinate status, perhaps a status even lower than that of animals.

The animal landscape approach walks a thin line between anthropocentrism and anthropomorphism. As an anthropological study, this dissertation explores aspects of human-animal relationships as a means of furthering our understanding of the physical and social landscapes of eighteenth-century plantations. Similarly, the animal landscape approach is a vehicle for studying any aspect of the human-animal relationship and how those human-animal relationships affect social interactions in the human realm. For instance, the animal landscape approach could be applied to studies of animal domestication in the Neolithic, exploring the co-evolution of humans and animals and the subsequent embrace of animals as property, property which could be used to establish power inequality and social classes. In this sense, both this dissertation and the animal landscape approach as a whole have an anthropocentric bent to them. This does not deny that animals have intentionality, a marker of anthropomorphism, but such intentionality and emotionality of animals is not the specific focus of the animal landscape approach as used in this dissertation. Rather, the animal landscape approach explicitly grants animals that form of agency which Silliman (2001) describes as acting meaningfully in circumstances that are only partly of the animals' own making rather than acting strategically and intentionally at all times. In this way, animals do what comes naturally to them in situations that can be markedly unnatural, such as a horse exhibiting its natural flight response the first time it is approached with a riding chair and expected to pull it. The dietary needs, physical conformation, and natural herd structures, among other things, are all aspects of an animal's life which influence how that animal is raised, what labors it can reliably provide, and what services and social capital it can contribute to the establishment or undermining of power differentials and social inequalities.

The practice theory component of the animal landscape approach compliments the overall landscape approach to studying human and animal interactions in the past. Branton (2009:55-56) notes that "landscape approaches are useful tools for those historical archaeologists who study the material reflections of power relations." Similarly, Knapp and Ashmore (1999:20) write, "by mediating between nature and culture, landscapes are an integral part of Bourdieu's habitus." Bourdieu (1977:72) himself writes, "The structures constitutive of a particular type of environment (e.g., the material conditions of existence characteristic of a class condition) produce habitus." Therefore, to understand habitus and the agents who contribute to this habitus, one must understand and appreciate the natural and cultural environments which constitute the landscape. On eighteenth-century plantation sites, one must study the built and the natural environment of the plantation, seeing how it influenced movement, viewsheds, and daily interactions amongst plantation residents, both human and non-human. These "human-animal meeting points" (Oma 2013) served as loci for power negotiations involving animal symbolism. For example, masters constructed elaborate stables for horses (e.g., Vlach 1993; Zierden and Anthony 2006) yet provided enslaved laborers with poorly-constructed, cramped cabins as a visual reminder to the enslaved of their extremely subordinate position, thus normalizing inequality on the plantation landscape (Orser 1988). Spencer-Wood and Baugher (2010) have labeled such landscapes as "powered cultural landscapes," or those landscapes in which human modifications to the land express power relations. It is within this habitus (Bourdieu 1977; Oma 2013) of daily interactions that all aspects of the human-animal relationship, whether husbandry-based, symbolic, or any other relationship, take place.

By understanding eighteenth-century Chesapeake and Lowcountry plantations as landscapes of social action (Bender 2002, Creese 2011, Delle 1998, 1999; Spencer-Wood and Baugher 2010; Terrell et al. 2003; Zierden 2010) rather than as bounded sites (Orser 1990), one can fully appreciate the habitus of human and non-human plantation residents and how individuals and animals moved about, were confined within, and/or negotiated space on the plantation. When it comes to understanding animals' roles in human-human interactions, the importance of space becomes ever more apparent. As Oma (2013:172) writes, "the proximity between humans and animals lends greater depth to the human-animal relationship." On eighteenth-century plantations, this proximity can be assessed not only through the built environment but also through analysis of the husbandry practices employed on each plantation and in each region. Similarly, those animals which supplied secondary products—such as traction animals or milk cows—were likely in closer relation with humans both in terms of their physical proximity and the types of interactions they had with humans (Oma 2013:172; Seetah 2005).

The interactions between people and animals and their proximity to one another on the plantation landscape likely changed through time. As such, an understanding of the "landscape history" (Adams 1990) of each plantation and each region is necessary to fully understand the interrelations of humans and animals and how these interrelations may have changed through time. As the physical environment changes, so, too, do the actual locations of human-animal interactions. Similarly, as land usage changes, aspects of the husbandry systems in place also change. In the eighteenth century, the animal husbandry systems employed by Chesapeake planters changed as there was a regional shift from tobacco production to more diversified agriculture founded on the production of three cash crops: tobacco, corn, and wheat. Whereas cattle had once been raised on an open-range system in the seventeenth century, in the eighteenth century, they were penned and served an integral role in crop rotation schedules as they ate the remaining grain stalks and fertilized the fields after harvest (Bowen in Walsh et al. 1997; Bowen 1999).

Borrowing from practice theory and co-evolutionary theory, the animal landscape approach focuses on the internal relations of the plantations rather than on those economic relationships in the larger market system. Agency, in addition to being granted directly to animals in the animal landscape approach, can be seen in people's relationships with animals. Marciniak and Pollard (2014:751) articulate that people can take their identities from the animals for which they care and take responsibility, such as shepherds. On eighteenth-century plantations, enslaved individuals took part of their identity from the animals with which they closely worked. An ox drover could use his or her semi-skilled position to jockey for access to better goods or foods. Enslaved plow-men and -women also used their position as a means to undermine those in power through the purposeful maltreatment of equipment or slow speed when plowing.

While the animal landscape approach was developed specifically for the study of working animals' contributions to the physical and social landscapes of eighteenth-century Chesapeake and Lowcountry plantations, the tenets of the animal landscape approach can be applied in any number of situations. The "animal turn" can be seen in any of the social sciences; as Barbara King (2010) puts it, "we are obsessed with the furry, scaly, feathered creatures who populate our world." As mentioned in the introductory chapter, volumes have been written on the roles of animals in human societies, both past and present. In archaeology, specifically, processes of domestication are one form of human-animal relationship that receive much attention.

It is from the efforts of the aforementioned social scientists that the animal landscape approach grows. This approach is useful for those interested in how humans and animals interact and how those interactions can have lasting effects on both the animals and the people involved. As Arbuckle and McCarty's (2014a) volume showcases, animals provide not just nutrition to our and to past cultures' daily lives; they are also integrated into social, economic, and political spheres of life, thereby creating, supporting, and deconstructing social inequalities. Through the incorporation of landscape studies, practice theory, and concepts of animal agency, the animal landscape approach examines animals' active contributions to the social world of humans.

Although landscapes are often thought of as broad expanses, by defining landscapes on interrelational terms (Creese 2011) rather than on spatial terms, one can truly focus on how animals and humans interact. These interactions can occur on large plantations, at city marketplaces, or even within individual households (i.e., Oma 2013). Similarly, the animals do not need to be living for human-animal interactions to occur; interactions which can play into "the power relations enacted in social life" (Russell 2012:9). Even dead, animals could be incorporated into the social order and used to establish, or subvert, that social order, as was the case of venison in Medieval England (Sykes 2007). Using practice theory, one can gauge interactions amongst people, between people and animals, and amongst all other components of the landscape (Knapp and Ashmore 1999). Finally, through an appreciation of animal agency, one can best understand the intricacies of how humans and animals interacted. Appreciating the natural biologies and behaviors of the animals allows one to better evaluate why one animal might be a more important symbol than another or how humans and animals must interact for both parties to thrive and prosper.

In practice, the components of the animal landscape approach are inseparable from one another. Just as landscapes combine culture and nature, daily practice involves interactions between and amongst all plantation residents, both human and non-human. These interactions are never a one-way street. In studying how humans interact with animals, naturally, one must take into account what each party brings to the table in these interactions and how that affects the actions and reactions of the other. Such interactions are truly interrelations which contribute to the overall landscape of a past society. Drawing specifically from Nerissa Russell's (2012) social zooarchaeology and Zeder's (2012a, 2012b), Budiansky's (1992), and O'Connor's (1997) approaches to domestication, the animal landscape approach is well-suited for studying not only working animals on eighteenth-century Chesapeake and Lowcountry plantations, but also any kind of human-animal interaction at any point in time and in any location.

Chapter 3: Situating the Animal Landscape

As Timothy Silver (2007) reveals, the history of the Colonial South is more than just a timeline of everything that happened after 1607 at Jamestown. To this timeline one must add an understanding of the varied landscapes of the Colonial South; how did humans, plants, animals, and climates all interact for the thousands of years of human occupation of the New World, and how did those interactions change through time?

Silver is not the first to recognize the importance of the overall landscape—and its many components—to the trajectory of historical processes in British North America. Reitz and Honerkamp's (1983) seminal work demonstrates that new environments and new stimuli translated into new animal husbandry and procurement strategies in the British North American colonies. The "English Barnyard Complex," or the set of traditional English faunal characteristics, was comprised of primarily domesticated stock such as swine, sheep, and older cattle; a few wild game animals; diverse domestic and wild birds; and a variety of fish. At the eighteenth-century Hird site in coastal Georgia, the "English Barnyard Complex" did not survive the transatlantic journey intact; colonists depended on cattle for meat rather than dairy or labor and relied on wild fauna more than did their counterparts back in England. Comparisons with other eighteenth-century British and Spanish sites along the Atlantic coastal plain suggest that regional resource availability, not ethnic norms, was the ultimate factor in colonial husbandry and animal procurement strategies.

In more directed studies, Edelson (2007) explores the significance of Lowcountry forests in the creation of colonial plantations while Anderson (2004) investigates animals as colonists in their own right in the Chesapeake and New England. Edelson's (2007) work examines British colonists' changing views of and relationships with the abundant forests of the Lowcountry. From seeing trees as indicators of agricultural potential to using the trees themselves as a means to profit, British colonists and enslaved Africans engaged in a generations-long give and take with Lowcountry forestlands to create the rice plantations emblematic of the eighteenth-century Lowcountry. Anderson (2004), on the other hand, highlights domestic livestock and the interactions amongst British colonists, domestic livestock, and local Native American populations. In her book, Anderson explores how cattle and hogs in New England and the Chesapeake acted as harbingers for the spread of British settlement, serving as crucial means for the British to lay claim to the land and as the subject of many disagreements between the local Native American populations and the encroaching British colonists. In each of these studies, the focus is not on what people did to the landscape but rather on the interplay amongst the people, plants, animals, resources, and landforms that make up that landscape.

Similarly, this chapter lays the foundation for the analysis of animal landscapes within the Chesapeake and Lowcountry by revealing the interplay and interdependence of people, plants, animals, and the built and non-built environment. The following pages are devoted to the economic, social, and environmental history of each region, thus situating the animal landscapes of eighteenth-century Chesapeake and Lowcountry plantations within the larger regional historical narrative.

Situating the Animal Landscape of the Chesapeake

As Phillip Morgan (1998:101) argues, "the Chesapeake was a region of variety and diversity," acknowledging the different physical environments of and climatic variability within the region and the range of settlements in the eighteenth century from mansions to hovels. In the colonial period, maritime pines interspersed with oaks dominated the tidewater whereas the piedmont was characterized by hardwoods. In the tidewater, these stands of pines and oaks grew on long peninsulas between the estuaries which emptied into Chesapeake Bay (Morgan 1998:31-32). Furthermore, the soils of the Upper Chesapeake differed from the soils of the Lower Chesapeake, owing to differences in the geological processes which formed them (Miller 1984; Walsh 2010). Such differences in physical environments contribute to the intra-regional variety observed in the development and refinement of agricultural practices throughout the Chesapeake from the seventeenth through the eighteenth centuries.

When the first colonists arrived in the Chesapeake, they were met with a landscape which was alien to them. Unlike English farmers with orderly plowed fields, Powhatan farmers cleared the forest for farmland by girdling trees and burning the undergrowth. Stumps were left in the fields, and crops were planted in hills created by mounding the soil with a hoe. When fields became unproductive, they were abandoned and new fields were cleared, thereby creating a mixed landscape of hardwood and pine forests scattered with villages, extant fields, and abandoned fields (Carson et al. 2008:42).

This foreign agricultural landscape was of little consequence to the first wave of English colonists to the region, however, as the Virginia Company settled Jamestown in 1607 with the hopes of profiting from the extraction of precious metals and iron, trade with local Native Americans, and the production of exotic commodities like wine and silk. However, the lack of precious metals in the area and tenuous relationships with the local Powhatan meant that the colony could only survive if it produced agricultural commodities. Following John Rolfe's 1612 experiments, tobacco became the company's saving grace, and a few years later the Virginia Company offered land rather than cash to stockholders and colonists to promote settlement and agricultural production (Gray 1933:21; Russo and Russo 2012). George Calvert, under whose name the colony of Maryland was chartered in 1632, learned from the tribulations of the Virginia Company and offered plantation lands to encourage settlement and the production of tobacco soon after Maryland was established (Russo and Russo 2012:45-47). The 1618 headright system of Virginia and the later "land right" system of Maryland granted colonists 50 acres of land for financing their own and one other immigrant's way to the colony (Bowen 2017:10; Walsh 2010:30, 111). This shift from corporate to individual ownership of land provided the foundation for the emerging subsistence system which combined aspects of Native American and British husbandry techniques and defined the seventeenth-century Chesapeake.

Carr and Menard (1989) dub the blend of European and Native American techniques and methods developed through persistence and experimentation the "Chesapeake system of husbandry." After the initial period of experimentation, the Chesapeake system of husbandry and its associated methods for growing and cultivating tobacco changed very little during the seventeenth century. Bowen (2017) refers to this process as "Domesticating the Chesapeake Landscape," in which the humans, plants, and animals shifted their environmental conditions to provide long-term means of securing sustenance. In the domesticated Chesapeake landscape, colonists grew tobacco for export, grew corn and raised livestock for consumption, and increasingly turned to additional crops and livestock for profit and economic protection.

To clear fields for tobacco and corn, colonists used the Native American practice of girdling, whereby a ring was cut into the bark of the tree, killing the foliage but leaving the trunk. The trunk could be hewn with an axe and used for lumber, leaving the stump and roots behind, or the entire trunk could be left (Carr and Menard 1989:413). The leftover brush was burned and worked into the soil to increase fertility. With stumps or entire trunks left in the fields, planters could not use plows to work the soil. Corn, tobacco, and peas, however, did not require plowed ground and flourished in the hoe-created hills which were scattered in and amongst the stumps and timber of the newly cleared land (Gray 1933).

To grow tobacco, Chesapeake planters prepared seed beds from January to early spring. While the seedlings developed, planters used hoes to create hills in the field so the seedlings could be transferred in mid-June. A labor-intensive crop, tobacco demanded regular pruning and pest removal while it grew in the fields. After cutting the crops in late September, planters cured the plants and packed them for shipment (Bowen 1994:156; Russo and Russo 2012; Walsh 2010:27). Tobacco could only be grown for about three to six years in a field, then corn could be planted in that field for one or two years. Because of the exhaustive nature of these crops, each field then had to lay fallow for about 20 years before it could be replanted (Walsh 2001:222). It was not until the end of the seventeenth century that livestock were temporarily penned on land that needed improvement. These manured lands were then usually only used for corn or other grains since manure was thought to taint the taste of the tobacco (Anderson 2002:393).

Tobacco was the lifeblood of the seventeenth-century Chesapeake; it was the largest source of income in the region and the most common currency throughout the seventeenth century (Russo and Russo 2012:55). However, the success of tobacco was its own downfall as it degraded the soil, causing colonists to diversify into wheat and livestock production (Bowen 2017). Wheat, however, was not a cash crop for the Chesapeake until the eighteenth century. Rather, it was only grown on those fields which had already been depleted of nutrients by tobacco and corn and were relatively clear of stumps and debris, thereby allowing planters to utilize plows (Miller 1984; Walsh 2010:103-105). On the other hand, livestock production was extremely successful and widespread in the seventeenth century.

The first livestock in the Chesapeake was imported from England, but it was not until 1619 that the Virginia Company began supplying the colony with livestock in earnest, sending 112 head of cattle and four mares. The following year, the Company made plans to send twice as many cattle and five times as many mares, in addition to 400 Welsh goats and 80 French asses (Gray 1933:28-29). After the dissolution of the Virginia Company in 1624, colonists could no longer rely on imported livestock and instead turned to natural increase to maintain and grow their herds (Anderson 2002:382). And grow, they did.

In the Lower Chesapeake, consumption of meat from domestic animals increased rapidly between 1620 and 1660, indicating that the colonists were developing a successful system of livestock husbandry in the region (Carson et al. 2008:44-45). Around 1620, farmers began fencing off peninsulas of land for better control and protection of their livestock, especially cattle, while still allowing them to roam the woods for sustenance (Bowen in Walsh et al. 1997:25-60; Bowen 1999; Brown and Sorrells 2004; Carr and Menard 1989:408-409; Walsh 2010:103-104). With free-ranging livestock, it became imperative for farmers to enclose their fields and orchards. In 1643, the Virginia Assembly required planters to fence their crops sufficiently to keep out the free-ranging livestock. Three years later, the Assembly defined a sufficient fence as four and a half feet tall. Maryland also passed similar measures but called for the fences to be five feet tall. If cattle and hogs were still able to break through the fence and destroy the crops, the livestock owner was held responsible only after the fence in question had been thoroughly inspected and approved (Anderson 2002:389; Carson et al. 2008:42; Laing 1959:162). Rather than fence livestock in and take a more hands-on approach to animal husbandry, it was much easier to fence them out and maintain free-range husbandry.

Livestock, especially cattle and hogs, thrived on the free-range system, fattening themselves on the fodder provided by the woodlands. In fact, cattle in the Lower Chesapeake attained larger sizes as the seventeenth century progressed, evidencing the ample grazing grounds of abandoned tobacco fields and forest lines (Bowen 2009; Carson et al. 2008:45). Although colonists provided little or no shelter for their cattle in the seventeenth century, they sometimes penned calves to draw cows in for milking (Bowen 1996:95-100). Those cattle which were not milked continued to roam the woodlands, gravitating to their preferred foodstuffs throughout the year thereby making it easy for the colonists to locate the animals and gather them for yearly culling.

Sporadic handling and supplemental feeding prevented the livestock from becoming feral. In penning calves, planters were not only able to draw in the cows for milking but also to handle the calves to acquaint them with human contact. Handling also allowed the planters to mark or brand their animals, showing ownership over the otherwise roaming herds. When necessary, planters provided corn as an incentive to draw the herds back to a central location (Anderson 2002:398-400; Walsh 2010:145-146).

Although colonists had planned on training the early imported cattle for draught work, the vast majority of livestock in the Chesapeake supplied only meat to the colonists (Anderson 2002:385-386; Bowen 1994). The oxen that were present in the Chesapeake during the first half of the seventeenth century were used mainly for hauling heavy loads, such as timber from the cleared tobacco and corn fields, and, starting in the mid-seventeenth century, for plowing in the isolated wheat fields (Anderson 2004:111; Russo and Russo 2012:101; Walsh 2010:144-145).

By the mid-seventeenth century, the Chesapeake system of husbandry was well-established and profitable for many of Virginia's and Maryland's colonists. Nearly every colonist in the Chesapeake owned cattle and hogs, including the poor settlers who would never have been so fortunate back in England. Livestock were land- but not labor-intensive and served as the perfect economic buffer to the labor- but not land- intensive tobacco production occurring at this time (Miller 1984:378-379). In the mid-seventeenth century, the horse population of the Chesapeake also increased and stabilized (Anderson

2002; Russo and Russo 2012:101). Thus the landscape of the Chesapeake at the middle of the seventeenth century was one of stability.

In this stable time, small planters thrived, using family and, occasionally, indentured labor to grow tobacco and subsistence crops on fifty to one hundred acres of land. The first slaves had arrived in British North America in 1619, but through the middle of the seventeenth century, slave-holding was restricted to the extremely wealthy (Russo and Russo 2012:66-68). The privileged slave-owning elite rose in influence and wealth during the 1680s to the 1720s, a time when the colony of Virginia began dealing with the slave-trading West Indies (Bradburn and Coombs 2006; Walsh 2010:392). With a focus on the quantity rather than the quality of tobacco at the end of the seventeenth century, planters sought to increase their labor forces and, thus, their tobacco outputs. With poorer planters struggling in the second half of the seventeenth century, many underprivileged Europeans saw little incentive to immigrate to the colonies as indentured servants and face the same struggles at the end of their indentures. Therefore, enslaved Africans gradually rose in importance and number in the Chesapeake workforce.

As more enslaved Africans were brought to the Chesapeake, laws were enacted to define their place in society. Under English common law, a child inherited his or her status from the father, meaning that children of enslaved women and white planters had legal grounds for their freedom. In 1662, however, it was declared that a child inherited his or her status from the mother (Russo and Russo 2012:68), thus paving the way for further legislation which ultimately racialized servitude in the Chesapeake.

As the ethnic composition of the Chesapeake gradually changed in the second half of the seventeenth century, so, too, did the agricultural practices. Diversification—such as increased wheat production, sheep rearing, and pasture improvement—became more evident as middling and small planters gradually copied larger planters and adopted more elements of traditional European husbandry in the fourth quarter of the seventeenth century (Gray 1933; Walsh 2010). Some (e.g. Menard 1973, 1976) argue that this diversification was a direct result of slumps in the price of tobacco. However, Bradburn and Coombs (2006), Miller (1984), and Bowen (2017) all see this late seventeenth-century diversification as a manifestation of processes which began much earlier in the century and as only tangentially related or completely unrelated to market depressions, such as the emergence of towns, the rise of the Atlantic World, and the domestication of the landscape.

Additionally, diversification took slightly different forms in the different subregions of the Chesapeake owing to differences in soil types and tobacco productivity. Walsh (2010) sees the Chesapeake as composed of regions of sweet-scented tobacco (typically the Lower Chesapeake), regions of Oronoco tobacco (typically the Upper Chesapeake), and peripheral regions (areas further away from the rich soils of the river basins). The rich bottomlands of the Lower Chesapeake could support sweet-scented tobacco for six to eight years in a single field, whereas the Oronoco tobacco grown in the Upper Chesapeake depleted the soil in three years (Walsh 2010:149). The depleting effects of Oronoco tobacco and the smaller scale of rich bottomland soils in the Upper Chesapeake meant that planters along the Potomac and Rappahannock River basins regularly had to reuse their old tobacco fields after only a few years of fallow rather than clear new ones. Therefore, planters in the Upper Chesapeake turned to ways to increase soil fertility and began to focus on corn over tobacco (Walsh 2010:472-475). In contrast, the Lower Chesapeake region in Virginia cultivated the sweet-scented tobacco which was most favored in the British market and actually increased in price at the end of the seventeenth century (Bradburn and Coombs 2006:135). As a result, while Upper Chesapeake planters were beginning to convert abandoned tobacco fields into grain fields and to integrate livestock into the crop cycle, Lower Chesapeake planters held tightly to tobacco production and imported slaves in larger numbers to increase their tobacco output (Gill 1978:380; Russo and Russo 2012).

At the turn of the eighteenth century, Virginia's black population was about 10-13% of the non-Indian population of the colony. As the colony became more integrated into the trade channels of the Atlantic World, middling as well as wealthy planters could now afford enslaved laborers (Bradburn and Coombs 2006:142-151). By 1720, approximately 25% of Virginia's non-Indian population was of African ancestry (Russo and Russo 2012:93). With the increase in both agricultural diversification and the number of enslaved Africans throughout the Chesapeake, the tasks completed by white and black laborers diverged in the eighteenth century. Indentured white servants were relatively rare in the eighteenth century, but those that remained labored in skilled tasks, such as carpentry or blacksmithing and plowing in the wheat fields converted from old tobacco fields. Enslaved Africans, on the other hand, continued to toil in the tobacco and corn fields with hoes and axes (Carr and Walsh 1988:163; Walsh 2010:336). Planters occasionally brought in English, Irish, and Scottish indentured servants specifically to train workers in and to supervise British agricultural techniques, such as plowing and manuring of fields, which accompanied the agricultural diversification of the early-eighteenth century (Walsh 2010:226-227, 293-328). This new dependence on plowing for wheat production in the Chesapeake meant that those skilled enslaved individuals who mastered the plow with draught animals could use their status to gain access to better goods or foods. Enslaved plow-men and -women could also use their position as a means to undermine those in power through the purposeful maltreatment of equipment or slow speed when plowing.

Diversification also meant that draught animals rose in importance in the region during the eighteenth century. Walsh (2010:611) notes that oxen had a clear advantage over horses when it came to plowing in the Chesapeake as they were sturdier, could work a full eight hours, and required less supplemental feed. Despite this, Anderson (2002:384) states that, in the second half of the eighteenth century, less than one in ten colonists in Maryland owned plows and presumably oxen. Although they may not have been as popular in the Chesapeake as they had been in England, oxen helped to transform the plantation landscape of the early-eighteenth-century Chesapeake into one of plowed wheat fields, hilled tobacco fields, and plowed or hilled corn fields.

As a direct result of the increase in plowing in the early-eighteenth century, grain outputs in the Chesapeake also increased greatly. Planters began exporting the excess corn and feeding it to their livestock (Carr and Menard 1989:414-415). As tobacco prices fluctuated and decreased, planters saw grain production as one of the ways to remain profitable. Additionally, wealthy slave-owning planters turned to other ways to augment their profits such as processing tobacco locally, using plows more regularly, producing more livestock to manure fields, and practicing more division of labor (Walsh 1989:394-396; Walsh 2001:241). As Russo and Russo state:

> By the end of the first quarter of the eighteenth century, Chesapeake settlers had established an economic and social framework that would prevail for the remainder of the colonial period and into the early national period. Agriculture dominated economic life, as most colonists earned their livelihood from products of land they owned or rented. [Russo and Russo 2012:162]

The "economic and social framework" of the eighteenth-century Chesapeake was highly dependent on enslaved labor. On plantations with four or more bound laborers, enslaved Africans labored side-by-side in gangs (Carr and Walsh 1988:162). However, Russo and Russo (2012:169) calculate that for the gang system of labor to work most effectively, ten to fifteen laborers were required, meaning that gang labor was sometimes restricted to larger plantations. Even with the increased reliance on slave labor in the eighteenth century, enslaved Africans never exceeded 40% of the total population of the Chesapeake, unlike in the Lowcountry (Greene 2007:529; Morgan 1998). Despite this, by 1740, Virginia was no longer just a society that had slaves; it was officially a slave society with a self-reproducing labor force (Morgan 1998:78-84; Sweig 1982). By the middle of the eighteenth century, indentured labor was all but absent in the Chesapeake, and nearly all planters, even relatively poor, owned at least one slave (Carr and Walsh 1988:148-149).

The enslaved labor force of mid-eighteenth-century Chesapeake plantations took over many of the tasks and trades once performed by indentured white laborers, including plowing. By the 1740s to early 1760s, many Chesapeake farmers realized that the key to a profitable plantation was focused grain production. Enslaved plow-men and plow-women and their plow-pulling draught animals turned the soil of old tobacco fields, creating suitable fields for grain cultivation. Once the grain had been harvested, sheep and cattle ran in the fields, eating the stubble and depositing valuable manure. This cycle greatly increased grain outputs, especially those of corn, without requiring additional enslaved laborers, as hills for the corn plants no longer needed to be constructed by hand and the soil was not depleted as quickly. This created a positive feedback loop; the excess corn could be fed to the livestock, who could be trained to plow the fields or simply run in the fields after harvest to manure it, both of which increased the corn output, which led to more supplemental feeding of livestock, who could then plow more fields, and so on and so forth. Additionally, new eighteenth-century laws prevented urban residents from producing their own livestock for consumption, so rural planters began raising livestock and fattening them on corn for sale in markets rather than solely for home subsistence (Bowen 1996:106; Bowen in Walsh et al. 1997:41-44; Walsh 2010:412-420). This "Golden Age in the Chesapeake" (Walsh 2010) saw planters reaping profits from livestock as well as the trifecta of staple crops: tobacco, corn, and wheat.

The Seven Years' War, however, decreased shipping routes between the colonies and Europe and upset the balance of agricultural production in the Chesapeake as farmers could no longer sell their tobacco to continental buyers. Following the war, many large planters tried to maintain tobacco production at Pre-War levels while growing ever-larger amounts of corn and/or wheat. Some, however, dropped tobacco production altogether in favor of wheat, such as George Washington (Walsh 2010:633). By 1792, the only areas of the Chesapeake where tobacco was still king were the James River piedmont, Southside, and Southern Maryland, all in the Lower Chesapeake region; all others had turned to grains (Walsh 2010:636). The Upper Chesapeake had already experienced decades of soil-degrading Oronoco tobacco production. With the decrease in tobacco marketability in the mid-eighteenth century and the need to replenish the soils by growing different crops, planters throughout the Upper Chesapeake increased their efforts in grain production.

This focus on gain production in the mid-eighteenth century went hand-in-hand with an increased reliance on draught animals. Unlike corn and tobacco, English grains, such as wheat and barley, required regular plowing. While some planters, such as wealthy Tidewater planter Landon Carter, maintained the use of hoe agriculture into the fourth quarter of the eighteenth century, planters who relied on plows tended to produce twice as much corn as those planters who still employed only hoes (Carr and Walsh 1988:177; Gray 1933; Walsh 2010:473). Planters now also needed more carts and wagons to carry the crops from the field to the barn and then to the market (Carr and Walsh 1988:148), whereas before, enslaved field hands could easily carry the tobacco leaves from one location to the other.

In addition to plowing in the fields, livestock were increasingly integrated into other aspects of the crop cycle in the eighteenth century, such as the manuring of fields or fattening on excess grains. In the eighteenth-century Lower Chesapeake, cattle decreased in size dramatically from what they had been in the seventeenth century. Bowen (1999, 2009; in Carson et al. 2008:46-48) attributes this to a decrease in grazing grounds. As fallow tobacco fields were brought under wheat cultivation, cattle could no longer feast on the secondary growth of the abandoned fields. Additionally, sheep, which were introduced successfully to the area in the late-seventeenth century, overgrazed the now scant meadows and grazing grounds, further depleting the food resources available to cattle. Therefore, the free-range husbandry which had been so successful in the previous century was now a liability to livestock production. Planters in the Upper Chesapeake experienced the shift from free-range to penned animal husbandry earlier than did planters in the Lower Chesapeake. Because of the deleterious effect Oronoco tobacco had on the soil, Upper Chesapeake planters had to start manuring their fields and converting fallow tobacco and corn fields to wheat fields earlier than did their contemporaries in the Lower Chesapeake. Both of these practices required more directed husbandry of livestock in the Upper Chesapeake in the eighteenth century.

This hands-on husbandry utilized supplemental feeding, penning, and training of draught oxen. Working animals needed to be kept relatively close to areas of activity, not only so they could easily be caught and harnessed but also to ensure that they maintained regular human contact to reinforce their training. Also, the penning of livestock, whether draught animals or otherwise, ensured a steady supply of valuable manure to increase the fertility of the fields (Walsh 2001:241). Furthermore, with the increased marketability of livestock in the second half of the eighteenth century, planters sought methods to reduce the time it took for animals to reach market weight. Some livestock still ranged freely in the woodlands, especially in the Lower Chesapeake, but the majority were penned on managed pastures, receiving excess corn as supplemental feed (Bowen 1996: 106; Bowen in Walsh et al. 1997:43-60). Laws in eighteenth-century Maryland even required horses to be fenced in during the growing season (Carr and Walsh 1988:166-171), a drastic change from the fencing laws of the previous century.

Although corn was paramount in the eighteenth-century Chesapeake for both human and animal consumption, wheat was the market darling of mid- to late-eighteenth-century Chesapeake plantations. Gray (1933:167) writes, "It is difficult to determine the time of the beginning and the extent of the tendency to permanently substitute wheat for tobacco as a market crop in the Tidewater." However, it is generally acknowledged that the mid-eighteenth-century was a time of transition into grain agriculture driven by the profitability of wheat (Gill 1978; Gray 1933). In the Chesapeake, enslaved laborers plowed wheat fields during the summer and hand broadcast and harrowed the seeds or planted them in rows with a drill plow in the late summer. Early the following summer, field hands harvested the wheat with either a sickle or a scythe, then threshed it with a hand flail or had horses or oxen tread the wheat to extract the grains from the stalks (Gill 1978). Cattle, sheep, or horses then ran on the fields, eating the remaining stubble and manuring the field (Carson et al. 2008:48), thus cementing the role of livestock in eighteenth-century wheat production in the Chesapeake and evidencing the importance of the interrelationships amongst plants, animals, and people on the eighteenth-century plantation landscapes of Virginia and Maryland.

Situating the Animal Landscape of the Lowcountry

Native Americans, Spaniards, and the French all laid claim to portions of the Lowcountry, the coastal region of what is now South Carolina and Georgia, in the sixteenth century. However, by 1585, all French and Spanish settlements in South Carolina had been abandoned, allowing the English to take a vested interest in the area. In the early 1630s, Sir Robert Heath sponsored an exploration of the coast of "Carolana" and at least one attempt at colonization (Edgar 1998:35). The first successful English colonization of South Carolina, however, did not occur until 1670, when the *Carolina* made landfall at Bull's Bay, thirty miles north of Charleston. Prior to that, the *Carolina* spent some time in Barbados to encourage Barbadians to accompany the English settlers to the new colony (Edgar 1998:11-35, 41, 47; Weir 1983:7, 47-73). The first Carolina colonists were primarily interested in creating plantation landscapes which resembled English estates (Edelson 2006). However, they soon realized that the varied terrains and natural resources of South Carolina were far too different from those in England to replicate the mother country's parklands. The diversity of ecological niches in the Lowcountry fostered a variety of native plant and animal life including oaks, palmettos, tupelo, marsh grasses, waterfowl, deer, and numerous freshwater and saltwater fishes (Edelson 2007:381-382; Edgar 1998:9). Native Americans and subsequent European colonists both cleared and maintained the woodlands of the Lowcountry through girdling of trees and burning of brush (Edelson 2007:387; Edgar 1998:16), enabling each to establish agricultural fields.

Regardless of the success in creating fields, South Carolina went through decades of trial and error before perfecting the cultivation of the crop that would come to define the region in the eighteenth century: rice (Edelson 2006). The earliest reference to rice growing in South Carolina dates to 1674, but the greatest efforts at experimenting in rice production did not occur until roughly 1690 to 1720. It was during this time of experimentation that the colony made money by exporting naval stores such as tar, pitch, turpentine, and lumber as well as furs and provisions, such as meat and corn (Edelson 2006:64-77; Gray 1933:55-58). These early exports of provisions were not exceptionally lucrative, but they did stimulate a very successful livestock industry.

South Carolina was the first North American colony to develop a cowpen system of open-range ranches run by slaves. Unlike Virginia, South Carolina was a slave society from the onset, and enslaved labor was essential to the colony's success (Morgan 1998:1). On a smaller scale, enslaved labor was essential to the success of many individual Lowcountry planting families who made their initial wealth through livestock grazing (Dunbar 1961:125). As described by the English botanist John Bartram, who travelled through South Carolina in 1765,

> A cowpen is A little settlement sorounded with piney poorish ground[,] which affords[,] by its extent of 6 miles round[,] more or less of tolerable pasture both winter & & sumer[,] haveing in that space different soils as swamps: low & dry ground[.] [there is] commonly 3[,] 4[,] or 5 negroes at A pen to take care of ye cattle & horses. [Bartram and Harper 1942:26]

Cowpens were usually 100 to 400 acres of cleared land with a large enclosure for cattle, pens for horses and hogs, a garden for provisions, and dwellings and outbuildings for the cowpen keeper and his family and the enslaved "cattle hunters" (Dunbar

1961:126). As Sluyter (2012:6) notes, enslaved cattle hunters may have brought aspects of open-range cattle ranching from their African homelands to South Carolina.

In addition to the knowledge of the enslaved cattle hunters, the success of South Carolina's cowpens also owed much to the natural environment of the colony. The Proprietors of South Carolina had wanted the colonists to be "planters and not graziers" (Gray 1933: 55) and to only produce livestock for their own consumption. However, the settlers recognized that South Carolina's mild winters and abundant range-lands were perfect for livestock production.

During the first years of settlement, cattle at cowpens were permitted to forage during the day but were penned at night in wattle stock pens (Jordan 1993:182; Otto 1987:16-20). Although the "black cattle" of South Carolina had horns and could protect themselves moderately from predators like wolves and bears, the practice of nightly penning continued into the early-eighteenth century until bounties were offered for killing the predators which threatened cattle (Otto 1987:16-20; Stewart 1991:5). Thereafter, cattle roamed the unfenced woodlands, savannas, and swamps of the Lowcountry, being rounded up periodically for marking, marketing, and the annual drive to coastal ports for slaughter and processing (Edgar 1998:133-134; Gray 1933:150; Otto 1987:23).

Although nightly penning was no longer practiced in the eighteenth century, the cattle herds were far from feral. Enslaved cattle hunters regularly penned young calves to entice the mothers back to the pens each night. While dairying was never a lucrative industry in the Lowcountry, cows returning to their calves each night were milked, and the resultant dairy products were consumed by those living at the cowpen, including the enslaved laborers and the white supervisor and his family (Jordan 1993:175). "Salting," or depositing salt or grains at a specific location for the cattle to consume, was also a means of herd control as it brought the cattle back to the pens and into contact with people on a regular basis (Gray 1933:150; Jordan 1993:185). This contact with people was very important because the cattle hunters had to be able to catch and restrain each animal for branding, the primary means of indicating ownership (Edgar 1998:133-134).

Despite these interactions with humans, the cattle largely fended for themselves, feeding on the various plants within the cowpen. In the spring, summer, and fall, the cattle routinely grazed on the coarse grasses of the pinewoods or the open savannas. During the winter, the cattle would browse in the hardwood forests along the rivers, eating the plentiful Spanish moss that grew there. Canes growing along the rivers and marshes also served as winter fodder. Wild fires frequented the pinewoods during the winter, clearing out the remaining dead grasses (Bartram and Harper 1942:32; Otto 1987:15-16). These fires may have been true wild fires or they may have been purposely set by colonists following the Native American practice of burning the undergrowth to promote secondary growth in forested areas (Edgar 1998:16). Either way, winter fires resulted in good grazing grounds once again the following spring. Thus, cattle hunters developed intimate knowledge of the local landscape of the cowpen, including their livestock's preferred foodstuffs and the locations of said foodstuffs so as to be able to locate the animals when needed. Bells attached to various cattle were sometimes also used to assist in locating the herd (Gray 1933:150). Because of the need to utilize a wide variety of environments throughout the year, cattle raised in the open-range system in the Lowcountry required 15 to 25 acres per head (Bonner 1963:86; Otto 1987:16).

The large tracts of land required for a profitable cowpen were not solely the domain of the cattle, however. Hogs were also raised free-range at the cowpens, thriving on the acorns and hickory nuts of the forests (Weir 1983:142). Similar to the cattle, hogs were enticed back to the pens of the cowpens periodically with scraps of food (Edelson 2006:47-48). Horses also were kept at the cowpens and were integral in rounding up and driving the cattle to slaughter each year. Corn and rice fields were also regular fixtures at cowpens. Planters cultivated rice in the low areas along the rivers and planted corn fields and gardens on the higher grounds (Otto 1987:22-23). Old cattle pens, having been manured by the cattle, were converted into fertile gardens, with "worm" fences keeping the cattle out of the corn fields (Bartram and Harper 1942:32; Edelson 2007:391). As John Drayton observed as late as 1802 (114), worm fences were six feet high and strong enough to keep out the "large herds of cattle and hogs, which continually roam the woods."

Throughout the eighteenth century, the cowpen system of ranching grew in the Lowcountry, expanding from the outer coastal plain to the inner coastal plain in the 1720s (Carney 1996:112; Dunbar 1961:128; Jordan 1993:171). Many grazers were also planters, owning rice plantations in the outer coastal plain and operating cowpens further inland (Otto 1987:23).

As the first truly profitable agricultural endeavor, cattle ranching provided the initial income for many Carolinians to invest in rice production. Rice had been one of the first agricultural products introduced to South Carolina, and in 1707 John Archdale wrote that South Carolina "produces Rice the best of the known World, being a Commodity for Returns home…" (quoted in Salley 1911:28). In the 1720s, rice rose to be the staple commodity in South Carolina (Edelson 2006:54). Around this same time, South Carolina planters adopted the task system of labor, whereby individuals were given a task or set of tasks to complete each day or season. After the task was completed, the additional time was, more or less, his or hers. The task system, a relative lack of direct supervision, and the practice of absentee ownership of both plantations and cowpens all combined to create a slave society in the Lowcountry that was much more autonomous than that in the Chesapeake (Edelson 2006:86; Jordan 1993:173; Morgan 1998). In the Lowcountry, enslaved field workers tended to work in very large groups with minimal white supervision. In South Carolina, laws dictated that at least one white adult male had to be present for every ten blacks on a plantation. However, many South Carolinians ignored the law, and it was common for a single white, or even enslaved black, overseer to have thirty enslaved laborers under him (Edgar 1998:79; Morgan 1998:2). These differences in the management of labor in the Lowcountry and the Chesapeake contributed greatly to how enslaved individuals in each region interacted with each other and with those of a different social status.

From the 1720s through the end of the eighteenth century, many of the enslaved laborers on Lowcountry plantations were tasked with laboring in the rice fields. Rice was first grown in the region in inland fields fed by freshwater streams, requiring the conversion of wet swamplands into fields using earthen banks and sluices to retain and channel water as needed (Carney 2001:86). By 1730, rice production shifted from the inland swamps to the more labor-intensive, yet higher-yielding, floodplains of tidal rivers, contributing to the exponential growth in rice exports at that time (Carney 1996:113; Weir 1983:145). By the latter part of the eighteenth century, rice cultivation had fully shifted to tidal portions of the major coastal rivers, where it employed an elaborate irrigation system using embankments, reservoirs, and dikes to control the ebb and flow of tidal rivers in field irrigation (Calhoun et al. 1982:20; Edelson 2006:139; Edelson 2007:385-386; Edgar 1998:137-139, 267-268; Lewis 1985:41). These elaborate field systems relied on enslaved and, to a lesser extent, animal labor for their construction and maintenance.

With the exception of abandoned Native American fields, much of the Lowcountry was wooded so the first objective of rice agriculture was to clear the land for planting. Trees were felled and removed, likely with the assistance of oxen, in January or February. Unlike in the Chesapeake, Lowcountry colonists turned the forests into commodities such as tar and lumber (Edelson 2007:390). Additionally, enslaved men and women burned the remaining stumps as well as downed limbs and underbrush, thereby fertilizing the soil much as the local Native Americans had done (Edelson 2007:382-391; Edgar 1998:16; Garrett 1998; Morgan 1998:149). These combined processes meant that the fields of the Lowcountry were fully cleared prior to planting, in contrast to the tobacco fields of the Chesapeake with their standing trunks and remnant stumps.

If planting rice along tidal rivers, enslaved laborers also had to construct the rice fields themselves, complete with their complex system of embankments, dikes, and ditches (Carney 2001:86). In March, the rice fields, both new and old, were prepped. New fields had to be desalinated, using rain water which had been collected in earthen embankments to flush the fields (Bartram and Harper 1942:13). In older fields, prepping involved burning the stubble from the previous harvest, plowing under the burnt stubble, fortifying the sides of ditches, leveling the fields, and clearing out the ditches and drains. Prior to planting, land was drilled with either plows or hoes, but John Drayton observed in 1802 (117) that drilling was done "most generally with the hoe." Rice planting began in April and lasted until June and was followed by alternating periods of hoeing and flooding. During this time, enslaved Africans also labored in the provisions fields and indigo fields, tending to the crops and hoeing when time permitted. In early September, slaves began the six-week long harvest using hand-held sickles. The stubble left after the harvest could be grazed, plowed under, and eventually burned, but the rice cycle was far from complete (Carney 2001:118-121; Easterby 2004:31-32; Edelson 2006: 78; Morgan 1998:149-151).

After the harvest, the rice was laid out to dry in the sun for a day and then processed. Processing involved threshing, milling, and winnowing the dried rice. Threshing removed the grains from the stalk and could be done with hand flails, animals which trampled the grains, or machines (Carney 2001:125). Milling and winnowing were done simultaneously to remove the outer husk from the grains and to polish the grains. In the early-eighteenth century, much of this was done by hand, using a wooden mortar and pestle and a woven basket. Under this system, pounding often began in late November or early December and could last until February (Edelson 2006:81-82; Morgan 1998:149-153). By the mid-eighteenth century, however, horses and oxen were the main source of power for removing the outer husks, operating pecker and cog mills (Breen 1982:247; Carney 1996:110-119; Drayton 1802:121; Edelson 2006; Morgan 1998:155). By the end of the eighteenth century, water-driven mills were used to pound and fan the rice (Edgar

1998:267-268; Morgan 1998:155). The entire processing procedure usually lasted until the rice cycle began again the following March (Carney 2001:118-121).

If rice fields became too overgrown with grass or lost their fertility, they were abandoned and new fields were carved from the woodlands and swamps. Planters routinely had the derelict rice fields converted into stocked fish ponds, supplying the plantation with pike, gar, mullet, trout, carp, and perch (Bartram and Harper 1942:13-14, 23; Edelson 2007:393). As planters grew richer from producing rice and other commodities, they purchased more land and more plantations. By the 1760s it was common for absentee planters to have managers to supervise their overseers (Edelson 2006: 153-154), rather than direct planter supervision of each plantation.

In addition to rice, eighteenth-century Lowcountry plantations produced indigo for export (Calhoun et al. 1982:21; Edgar 1998:144-146) and foodstuffs for home consumption. As John Drayton (1802:113) noted, "In the husbandry of Carolina, two objects are particularly kept in view by the planters and farmers. The first is to raise something for sale; and the second is to procure provisions for family concerns." Although only a secondary concern, many planters continued to grow peas and corn, which could be cultivated with either the plow or the hoe (Drayton 1802:136-137).

The cattle and rice industries in South Carolina created a very affluent planting class. In the eighteenth century, South Carolina had the highest per capita income and wealth of any of the North American colonies, and Carolinians expressed this wealth in material goods (Weir 1983:141, 236-237). Wealth was also inextricably linked with land, and the "leading men" in Carolina society were those with large property holdings (Weir 1983:229). In the eighteenth century, the average South Carolina plantation was five hundred acres (Edelson 2007:392). These large plantations were economically and socially linked with nearby Charleston, the commercial and governmental center of colonial South Carolina (Zierden et al. 1985). By the late-eighteenth century, Charleston was the fourth largest colonial city and the wealthiest city per capita in the American colonies (Reitz et al. 2006:112). Compared to the other southern colonies, Charleston-area residents were four times wealthier than those of the Chesapeake and five to ten times richer than those in North Carolina (Edgar 1998:162). Charleston's residents had great social influence on the outlying plantations. Many of the eighteenth-century Lowcountry's planting and grazing elites kept houses in the city, furthering solidifying Lowcountry plantations' ties with Charleston.

Despite these deep connections to the city of Charleston, for enslaved individuals, plantation life was relatively insular. The huge number of slaves that labored on the plantations fostered close-knit enslaved communities. By the 1720s, more than half of South Carolina's slave population lived on plantations with twenty or more slaves (Morgan 1998:39). By the mid-eighteenth century, blacks outnumbered whites in the Lowcountry. At its highest, there were nine blacks for every one white person in the region (Morgan 1998:39). With a black majority, the social landscape of the eighteenth-century Lowcountry was a vital part of everyday life in the region. Furthermore, the unique cultural makeup of the Lowcountry allows for an in-depth investigation of how individuals from different cultures and economic classes communicated with each other through explicit and implicit gestures of power negotiation involving animals and animal labors.

Conclusions

The landscapes of eighteenth-century Chesapeake and Lowcountry plantations shaped and were shaped by the interactions amongst all of the people, plants, animals, and landforms which made up each region and each individual plantation. In the eighteenth-century Chesapeake, this landscape was predicated on nearly a century of British occupation of the region, encompassing economic, agricultural, and social change. By the turn of the eighteenth century, the social and economic framework for the rest of the colonial period in the Chesapeake was set; enslaved laborers, white overseers and managers, draught animals, and meat animals created a landscape of increasing diversification founded on the production of mixed grains using traditional British techniques.

In the Lowcountry, the natural environment and the high proportion of enslaved laborers created a different landscape than that seen in the Chesapeake. From the onset, the colony relied on enslaved laborers, who in turn worked on and with the natural ecosystems of the Lowcountry to create successful systems of livestock production and rice cultivation. In both the Chesapeake and the Lowcountry, the animal landscapes of eighteenth-century plantations grew from these overall plantation landscapes, landscapes created through the interrelations amongst people, plants, animals, buildings, and the natural environment. The next chapter explores the methodologies used to examine these landscapes and interrelations.

Chapter 4. Uncovering the Animal Landscape: Zooarchaeological and Historical Methods

Studying the intersection of human and animal lives on the landscape necessitates the use of multiple lines of evidence. In Nicole Branton's (2009:53-54) words, landscape approaches "embrace, and even demand, a rich variety of evidence (artifacts, text, and oral history)." Fortunately, both the eighteenth-century Chesapeake and the eighteenth-century Lowcountry present rich archaeological and historical records.

This research examines faunal remains, archaeological reports, standing architecture, maps, probate inventories, personal writings, and newspaper advertisements from both of the regions. However, the sources of quantifiable data used to the greatest extent in this dissertation were faunal assemblages and probate inventories. Archaeological reports, standing architecture, maps, personal writings, and advertisements from the *Virginia Gazette* and the *South Carolina Gazette* provided supplementary data on the animal landscapes in each region including the physical locations of animals on plantations, the labors of animals on those plantations, and interactions between and amongst humans and animals in each region.

Each dataset used in this dissertation presents its own challenges and silences. Zooarchaeological remains are subject to preservation, recovery, and identification biases. Given the need for relatively complete specimens of cattle lower limb bones, as described in the zooarchaeological methods below, this dissertation was able to use cattle specimens which tend to preserve well in the archaeological record, are easily recoverable with one-quarter inch screen, and are relatively easy to identify (Bartosiewicz 2008; Johannsen 2002:40-41). The relative silence of the archaeological record in regards to equine remains, however, is related to both cultural practices (Poole 2013; Simoons 1994:187-188) and, especially in the Chesapeake, sampling strategies, as shall be discussed in detail in the sixth chapter.

Furthermore, methodological biases plague the zooarchaeological record. The pathologies used in the identification of draught oxen can be age-, weight-, *or* labor-related (Boosman et al. 1989; Johannsen 2002), thereby clouding the identification of working cattle. Assessing the age at death from zooarchaeological remains is also problematic. European and Near Eastern zooarchaeologists prefer to use tooth eruption and wear sequences for aging faunal remains as tooth development is less affected by outside factors than is epiphyseal fusion. Also tooth eruption and wear sequences are able to give a more precise estimation of age at death, rather than the broad age ranges suggested by epiphyseal fusion (Watson 1978). However, North American historical faunal assemblages tend to be relatively small with few complete ageable mandibles, leaving epiphyseal fusion as the only option for determining age at death. Bowen's study of provisioning in the Chesapeake shows that tooth wear and epiphyseal analyses of cattle remains from historical assemblages return similar results. Furthermore, Bowen discovered that documentary evidence shows age trends comparable with those evidenced by epiphyseal fusion (Bowen in Walsh et al. 1997:35-36).

Historical documents, too, are not without biases. Literate white men produced all of the personal writings and maps used in this dissertation, leaving a majority of the eighteenth-century population in each region without their addition to the historical record. Additionally, probate records can give a skewed depiction of the living population, as most probated decedents were older males who, because of their age, had a longer time to accumulate wealth, giving the impression of greater overall wealth at the time (Main 1975:96-97). However, probate inventories from the Chesapeake and the Lowcountry were subject to the same general guidelines, making the regional datasets comparable. As Main (1975:91) writes "…the English form served as a model to every British colony, making those records that survive readily comparable throughout the old empire."

The comparability of sources not only within but also between the archaeological and historical records is of utmost importance in this research. As such, all major datasets, including zooarchaeological, probate, and newspaper, represent the second through the fourth quarters of the eighteenth century. The zooarchaeological and probate data from plantations within each region also represent the same subregions: the Upper Chesapeake and the outer coastal plain of the Lowcountry. Furthermore, the zooarchaeological and probate data represent wealthy plantations in both of the regions, as will be clarified below.

The use of multiple lines of evidence is essential in this research. By incorporating historical and zooarchaeological data, this dissertation uses each to inform the interpretation of the other (see Albarella 1999; Bowen 1990). Through examining the documentary record and the zooarchaeological record as independent sources, one can gain insight into the crucial "cultural and social context from which the archaeological material can be interpreted" (Bowen 1990:5) and can explore the biases and ambiguities of each invaluable resource to historical archaeology. Ultimately, this combination of zooarchaeological and historical data illuminates the presence of working animals on eighteenth-century plantations, the physical labors of those animals, and the social implications of the interactions amongst working animals and plantation residents.

Zooarchaeological Materials and Methods

The zooarchaeological materials analyzed in this study were recovered from Mount Vernon, Virginia; Oxon Hill Manor, Maryland; Jamestown Island, Virginia; Yorktown, Virginia; Drayton Hall, South Carolina; and Stobo Plantation, South Carolina. Other zooarchaeologists identified and analyzed the faunal remains from Mount Vernon, Oxon Hill Manor, and Stobo Plantation (Atkins 1994; Bowen et al. 2016; O'Steen 1986; Webber and Reitz 1999). Their identifications were used to pull the equine and bovine elements required for further study. The faunal remains from Drayton Hall, however, had only been partially identified and analyzed. Therefore, the author identified and analyzed all faunal remains from the Pre-Drayton Assemblage (Carlson Dietmeier 2015a) and from the South Flanker Well (Carlson 2014a). These remains were identified using Joanne Bowen's comparative collection held in the Colonial Williamsburg Foundation Zooarchaeology Lab and the skeletal collections of the Smithsonian Institution Department of Vertebrate Zoology. After the author completed the identification of the Drayton Hall remains, the bovine and equine elements were subjected to the same analyses as the cattle and equine remains from the other sites.

Identifying Working Oxen

Bartosiewicz et al.'s (1997) methodology was the primary method used in this research to identify draught oxen from Chesapeake and Lowcountry plantation faunal assemblages. As per the methodology, only cattle metapodials and phalanges were analyzed. Sample sizes of these elements from each site can be seen in Table 1 below.

Table 1. Number of Metapodials and Phalanges Analyzed from Each Eighteenth-Century Site

	Mount Vernon	Oxon Hill Manor	Drayton Hall	Stobo Plantation
Complete Metacarpals	2	5	1	0
Proximal Metacarpals	3	9	3	0
Distal Metacarpals	2	7	7	0
Complete Metatarsals	0	6	2	1
Proximal Metatarsals	2	6	9	5
Distal Metatarsals	3	8	6	2
Complete First Phalanges	18	68	24	1
Complete Second Phalanges	18	69	26	5
Complete Third Phalanges	10	80	26	4

Metapodials and phalanges were examined and scored for the severity (on a rank of 1 to 4) or the presence or absence (on a rank of 1 to 2) of pathological changes according to the system described in Bartosiewicz et al. (1997:35-57) and elaborated elsewhere (Fabiš 2002: 60; Groot 2002:54-55; Johannsen 2002) (Table 2). Metacarpals were examined for proximal exostosis (new bone formation), proximal lipping (the extension of articular surfaces), proximal osteoarthritis (the presence of at least three of the following: grooving of the articular surface, eburnation, extension of the articular surface, and exostoses around the periphery of the bone), striated facets on the proximal end, distal exostosis, broadening of the distal epiphysis, palmar depressions on the distal shaft caused by damage to the *bursae articularis*, distal osteoarthritis, and fusion of the second metacarpal. Metatarsals were examined for proximal exostosis, proximal lipping (Figure 2), proximal osteoarthritis, distal exostosis, broadening of the distal epiphysis, plantar depressions on the distal shaft, distal osteoarthritis, and transverse striations of the shaft. The proximal (first) phalanges and the medial (second) phalanges were examined for exostoses near the proximal articular surface, lipping of the proximal articular surface, proximal osteoarthritis, exostoses near the distal end (Figure 3) and distal osteoarthritis. Additionally, the distal (third) phalanges were examined for proximal exostoses, proximal lipping, and proximal osteoarthritis. Bartosiewicz et al. (1997), Baker and Brothwell (1980), and Bartosiewicz and Gál (2013) were used in identifying each of the aforementioned pathologies. The pathological scores for each specimen were recorded on worksheets for each site (see Appendix A).

Table 2. Pathologies Assessed in this Research

Pathology	Scoring	Elements Assessed
Proximal Exostoses	1-4	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Proximal Lipping	1-3 (MC, MT) 1-4 (PI, II, III)	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Proximal Osteoarthritis	1-2	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Striated Facet Near Proximal Surface	1-2	Metacarpal
Transverse Striations on Medio-Proximal Surface	1-2	Metatarsal
Depression on Palmar/Plantar Surface Near Distal End	1-3	Metacarpal, Metatarsal
Distal Exostoses	1-4	Metacarpal, Metatarsal, Phalanx I, Phalanx II, Phalanx III
Broadening of Distal Articular Surface	1-4	Metacarpal, Metatarsal
Distal Osteoarthritis	1-2	Metacarpal, Metatarsal, Phalanx I, Phalanx II
Fusion of the 2nd Metacarpal	1-2	Metacarpal

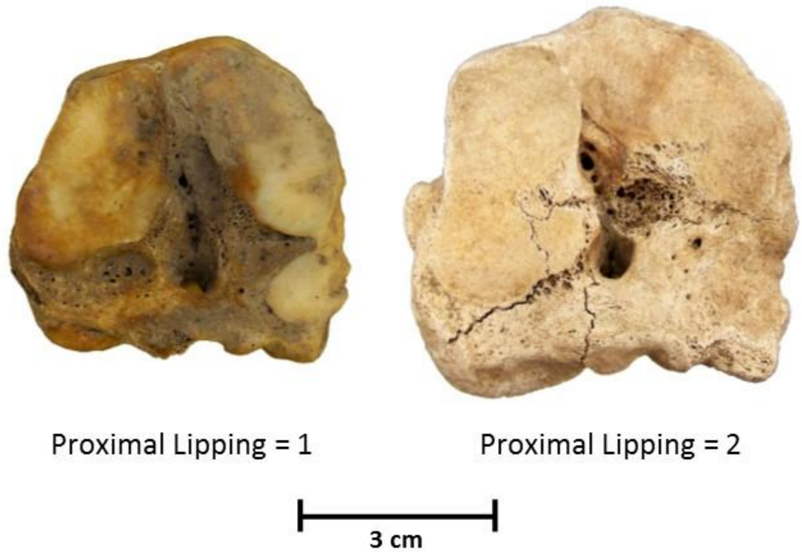


Figure 2. Proximal left metatarsals. The metatarsal from Oxon Hill Manor exhibits no lipping (score of 1), whereas the metatarsal from Drayton Hall exhibits minor lipping (score of 2).

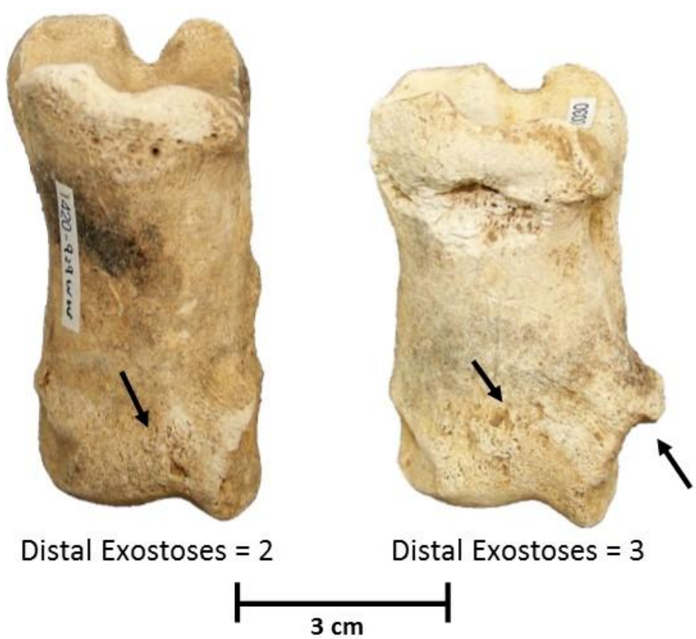


Figure 3. First phalanges from Mount Vernon exhibiting differing degrees of severity of distal exostoses.

For each complete element, the pathological index (PI) was calculated using the formula:

$$PI = \frac{\text{(sum of the scores from each type of pathology} - \text{number of variables)}}{\text{(maximum score} - \text{number of variables)}}$$

The PI measures the total degree of deformation for each element and ranges from zero to one, with one being the most severely pathological (Bartosiewicz et al. 1997:20). The PI gives the most comprehensive measure of pathological severity for each element as it takes into account all of the pathologies which can be scored for each element.

Unfortunately, only a small number of complete metapodials were recovered from each of the plantation sites (see Table 1 above). Metapodials can reveal the sex of the individual, as discussed below, in addition to information on the working or non-working life of the individual vis-à-vis the pathologies present. As such, it was imperative to develop a measure of overall degree of pathological severity for fragmentary metapodials. The author developed the Modified Pathological Index (mPI) for fragmentary metacarpals and fragmentary metatarsals based on Bartosiewicz et al.'s (1997) pathological index (PI). The Modified Pathological Index (mPI) allows for the calculation of the degree of pathological manifestation on metapodials where approximately 50% of the pathologies outlined by Bartosiewicz et al. (1997) were able to be scored. Laura J. Miller (2004:130) also established a modified pathological index (MPI) for proximal and distal metacarpals and metatarsals based closely on Bartosiecicz et al.'s formula. The mPI used in this dissertation was developed independently of that developed by Miller, but they are noticeably similar in their formulae.

The mPI allows for an index of pathology to be assessed for the proximal and distal ends of metapodials, thus greatly increasing the sample sizes of historical assemblages and resulting in a more accurate interpretation of the usage of draught cattle in the past. Four different mPI formulae were developed, depending on the element and the location to be assessed. They are as follows:

Metacarpal

$$\text{Prox5mPI} = \frac{(\text{Prox. Exost.} + \text{Prox. Lip.} + \text{Prox. Osteoar.} + \text{Prox. Facet} + \text{Fusion}) - 5}{8}$$

$$\text{Dist4mPI} = \frac{(\text{Dist. Exost.} + \text{Dist. Broad.} + \text{Dist. Depr.} + \text{Dist. Osteoar.}) - 4}{9}$$

Metatarsal

$$\text{Prox4mPI} = \frac{(\text{Prox. Exost.} + \text{Prox. Lip.} + \text{Prox. Osteoar.} + \text{Striat.}) - 4}{7}$$

$$\text{Dist4mPI} = \frac{(\text{Dist. Exost.} + \text{Dist. Broad.} + \text{Dist. Depr.} + \text{Dist. Osteoar.}) - 4}{9}$$

The mPI can be used as a stand-alone measurement of the severity of pathology on only incomplete elements or, as was used in this dissertation, it can be applied to both incomplete and complete metapodials, increasing the overall sample size. To assess both incomplete and complete metapodials together, and thereby to achieve the greatest possible sample size, however, the appropriate mPI formula must be applied to the proximal and distal portions of each complete element. The mPI of an incomplete element cannot be compared to the PI of a complete element; only the appropriate mPIs of both complete and incomplete elements (Metacarpal Prox5mPI, for example) can be combined for the sample to be mathematically relevant.

In general, the mPI overestimates the severity of pathology on a bone, as Miller (Laura J. Miller 2004:546-547) also found to be true using her MPI. When assessing a fragmentary metacarpal or metatarsal, there are fewer pathologies to be scored and a lower maximum possible score, resulting in a value in the denominator which is lower than it would be if you were assessing the PI of a complete metacarpal or metatarsal. Because both the mPI and the PI are essentially ratios of pathological severity, the mPI, with its lower denominator value, will return a higher ratio than would a PI calculation. A hypothetical assemblage of 60 complete metatarsals and 60 complete metacarpals was assigned pathology scores based off of the general trends observed in the complete archaeological metapodials from Oxon Hill Manor (i.e., none of the complete metacarpals from Oxon Hill Manor had a proximal exostoses score greater than two so none of the hypothetical metacarpals had a proximal exostoses score greater than two). These hypothetical complete metapodials were then subject to the calculation of PI, Prox5mPI (if a metacarpal), Prox4mPI (if a metatarsal), and Dist4mPI. The mPI calculations consistently returned a higher value than the PI calculations. In the case of the metacarpals, the difference between the PI and the Prox5mPI calculated on the same bones was statistically significant ($t= -2.149$, $df=59$, sig.=.036). Similarly, the difference between the PI and the Dist4mPI of the metacarpals was statistically significant ($t=2.634$, $df=59$, sig. =.011). As such, the PI and mPI should never be compared to each other. However, a complete element can be compared with a fragmentary one by calculating the analogous mPI of the complete element, as stated above.

Sex distributions of cattle were used as complementary evidence in identifying working cattle, as draught cattle in the eighteenth-century British colonies tended to be castrated males. Male cattle reach a larger size than female cattle; as such, male cattle are able to pull heavier loads (Bartosiewicz et al. 1997; Conroy 2007:2). Castration allows the male cattle to reach their full size—in most cases actually taller than intact males—while producing a less temperamental working animal than if left intact. Sex categories of cattle were assigned following the osteometric analysis of metacarpals. Metapodials were measured following the methods outlined in Von den Driesch (2004). Although all metapodials provide primarily weight-related information, which is influenced by sex, breed, and age (Bartosiewicz 1987), this research privileged metacarpals because they display more sexual dimorphism than metatarsals and exhibit differences amongst bulls, cows, and steers (Bartosiewicz 1987:48; Bartosiewicz et al. 1993: 71; Higham 1969a:64; Thomas 1988:88; Wilson 1994). Additionally, distal breadth measurements were privileged over any other measurement because distal metapodials show greater sexual dimorphism than proximal metapodials, again related to the bones' weight-bearing functions (Bartosiewicz 1987:48; Bartosiewicz et al. 1993:71; Higham 1969a:64; Higham

1969b:139; Thomas 1988:86). DNA tests confirm that the distal breadth of metacarpals is strongly correlated with the sex of the individual (Svensson et al. 2008; Telldahl et al. 2012).

Although not used for determining sex distributions, all lower limb elements assessed in this dissertation were measured according to the standards set by Von den Driesch (2004). All measurements were recorded in a notebook to be used in future research. Additionally, each specimen was photographed from multiple angles to show the various locations which were scored for pathologies. All quantitative information was recorded in a database using IBM's Statistical Package for Social Sciences (SPSS). SPSS and Microsoft Excel were used to compare the quantitative data from both regions and to create the charts and graphs used throughout this dissertation.

Identifying Working Equines

Because of their archaeological rarity, all remains identified as *Equus* sp. were analyzed in this research. The number of equine remains from each site is recorded in Table 3 below. Teeth were analyzed for structural changes and all bones were examined for remodeling. Baker and Brothwell (1980) and Bartosiewicz and Gál (2013) provided information on identifying illness-related or congenital pathologies while sources referenced throughout this section were used to determine which of the pathological manifestations were related to the use of equine labor.

Table 3. Complete or Nearly Complete Equine Remains Analyzed from Each Site

	Isolated Teeth	Vertebrae	Radii	Phalanges	Other Fragments
Mount Vernon	0	0	0	0	0
Oxon Hill Manor	0	0	0	0	0
Drayton Hall	6	2	1	2	5
Stobo Plantation	1	0	0	0	2
Jamestown Island			Articulated Skeleton		
Yorktown			Articulated Skeleton		

Adult equine teeth were examined for bitwear on the mesial half and occlusal surface of the lower second premolar and on the mesial half of the upper second premolar (Janeczek et al. 2010:332; Olsen 2006:94, 100). Additionally, the lower second premolars were examined for exposed enamel and/or dentine on the anterior surface. The exposed areas were measured according to the standards laid out in Bendrey (2007).

Since all equine remains from the six sites were analyzed including two nearly complete skeletons, the general trends in types and locations of pathologies were used to identify if the horses from each site were primarily riding or traction horses. This was especially important in the analysis of the skeletons from Jamestown and Yorktown. Generally, pathological changes to the axial skeleton of equines are associated more closely with riding. Ossification of the nuchal ligament to the cranium is age-related but may also be related to riding, especially riding at a fast pace since it has a higher prevalence in racehorses (Upex and Dobney 2012:200). Pathologies of the vertebrae of horses also are associated with riding and may include osteophyte formation, overriding or impinging spinous processes, horizontal fissures through the caudal epiphyses and new bone formation on and around the articular surfaces (Upex and Dobney 2012:201). Daugnora and Thomas (2002:73), Mayer-Kuester (2006:247), and Janeczek et al. (2010:332) associate proliferative changes in the thoracic and lumbar vertebrae of horses with their use as riding animals. Pathological changes to the equine spine are likely related to the use of saddles with rigid trees and, especially, to the use of ill-fitting saddles (Mayer-Kuester 2006:247; Olsen 2006:93).

Although Olsen (2006) states that pathologies of the shoulder, spine, hip, and feet are simply related to strenuous labor, Daugnora and Thomas (2002:73) write that injuries to the shoulder and hip are more common in traction than they are in riding. Olsen (2006:94) does agree, however, that traction is likely to lead to increased rugosity of muscle attachments or arthritis of the horses' limbs. Therefore, this research operated under the notion that spinal injuries are generally associated with riding, and upper limb injuries are generally associated with traction, but all other labor-related pathologies cannot be assigned to a particular action with any degree of certainty.

Moreover, when present, metapodials and phalanges were scored for pathologies on the same scale as that presented in Bartosiewicz et al. (1997), similar to Rossel et al.'s (2008) application of Bartosiewicz et al.'s methodology to donkey remains. Because of the extremely low numbers of equine lower limb bones, however, these scores could only be used as an additional measure of recording the presence or absence of certain pathologies and were not used in any calculations or comparisons.

All equine remains were measured following the standards in Von den Driesch (2004). These measurements were used to determine the shoulder height of the individuals present using Vitt's (1952) methodology. Equine remains were also photographed following analysis. The data collected from the equine remains were largely qualitative in nature so were retained in a spreadsheet of descriptive notes.

Assessing Working Animal Husbandry

In addition to identifying working animals, the results of the pathological assessments can be used to infer broad strategies of animal husbandry, such as the keeping of animals to an older age. However, this dissertation's primary means of assessing working animal husbandry in the zooarchaeological record was through age and sex distributions. The age of slaughter of an individual can suggest the intended use(s) of that animal, with older animals tending to be kept for secondary products such as dairy or traction (Miller 1984; Walsh et al. 1997:24-54). Similarly, the sex of the animals, especially whether a male was castrated or kept intact, can indicate selective breeding practices and intended use(s) of cattle, both important aspects of husbandry. Data on the epiphyseal fusion from all cattle bones were used to reconstruct the distribution of broad age categories (Silver 1970). Technical reports from all of the sites assessed except for Oxon Hill Manor supplied data on epiphyseal fusion (Atkins 1994; Bowen et al. 2016; Carlson 2014a; Carlson Dietmeier 2015a; Webber and Reitz 1999). Therefore, data from Oxon Hill Manor was not used in the reconstruction of age distributions from the eighteenth-century Chesapeake. Sex distributions of cattle were developed using the osteometric methodologies outlined above.

In analyzing equine remains, epiphyseal fusion and tooth eruption and wear sequences were used to age the individuals present (Levine 1982; Silver 1970). Sexing of the equine remains was accomplished through the presence of well-developed canine teeth (Bartosiewicz 1995:55; Evans 2000:33) and pelvic morphology (Sisson and Grossman 1953:112).

As stated above, as the pathologies assessed on cattle lower limb bones can be related to the age, workload, or living conditions of the individual (Baker and Brothwell 1980; Bartosiewicz and Gál 2013; Boosman et al. 1989; Johannsen 2002), the pathological indices hint at overall trends in cattle husbandry. In assessing the PI and/or the mPI of cattle elements, outliers represent those most significantly pathological elements and, thus, are most likely to have come from draught cattle. General trends in the presence and severity of pathologies, including both outliers and those with a normal distribution, relate to the overall practices of raising cattle in each region. Therefore, age and sex distributions and pathological indices are complementary to each other, providing information on the total cattle population in each region and how that relates to the raising of working cattle. The following section explores how historical materials were used to flesh out the husbandry information provided by the zooarchaeological record and to provide additional information on animal landscapes.

Historical Materials and Methods

The historical materials utilized in this research represent a wide array of primary sources. The largest source of historical data came from probate inventories and will be the focus of this section. However, other sources of historical data were eighteenth-century maps, George Washington's personal writings (Digital Collections from the Washington Library [DCWL] 1785-1798; George Washington Papers at the Library of Congress [GWPLC] 1785-1786; The Papers of George Washington Digital Edition [PGWDE] 1757-1798), 112 weekly farm reports from Mount Vernon dating from 1789 to 1798 (Mount Vernon Department of Archaeology [MVDA], Farm Combine Document, Farm Reports, 1789-1798), Charles Drayton's diaries (Drayton Hall [DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820), and newspaper advertisements. The *South Carolina Gazette* was in operation from January 15, 1732 through December 11, 1775, while the *Virginia Gazette* was published from September 10, 1736 through December 9, 1780. Each newspaper is accessible and searchable through Accessible Archives (2015a, 2015b). Each newspaper was searched for all instances of "plough," "ox" or "oxen," "mule," and "ass." Because of the large number of articles pertaining to horses, a systematic survey of the newspapers was conducted. The terms "horse," "mare," "gelding," "stallion," and "stud" were searched from the years 1737, 1751, and 1775 in the *Virginia Gazette*. These same terms were searched from the years 1732, 1750, and 1775 in the *South Carolina Gazette*. The personal writings and eighteenth-century maps used in this dissertation were systematically reviewed for references to animals, animal husbandry, and human-animal interactions, providing large amounts of qualitative data referenced in the remaining chapters of the dissertation.

Probing the Past, a joint project between George Mason University and Gunston Hall, supplied the Chesapeake probate inventories used in this dissertation. Project staff collected and transcribed probate inventories from the Chesapeake region of Virginia and Maryland, dating from 1740 to 1810. The vast majority of the transcribed probates came from plantations in counties along the Potomac or Rappahannock Rivers or along the northern Chesapeake Bay. Only those probates which contained enough food service items to serve at least ten guests were included in the Probing the Past database (Roy Rosenzweig Center for History and New Media 2006). As such, these inventories represent genteel Chesapeake colonists; small farmers and poor urban and rural individuals were not included in the database. A total of 171 probate inventories from 1741 to 1789 constituted the Chesapeake sample of plantation probates used in this research.

The probates from the Lowcountry were accessed through "Fold3" by Ancestry (2016). Fold3 contains digital scans of eighteenth- and nineteenth-century South Carolina court records including estate inventories, appraisement books, and bills of sale. Holcomb's (1977) *Probate Records of South Carolina Volume I: Index to Inventories, 1746 – 1785* indexes all inventories for that time period including the volume and page numbers in which the inventory can be found. Occasionally, the location in which the probate was taken was also listed in Holcomb's book. Only those probates which listed estates in or around Charleston were pulled for further analysis to limit the sample to plantations in the outer coastal plain of the Lowcountry. These included estates within Charleston and within the parishes of: St. Stephen's; St. John's, Berkeley; St. George, Dorchester; St. James, Goose Creek; St. Thomas & St. Dennis; St. James, Santee; Christ Church; St. Andrews; St. Paul; St. John's, Colleton; St. Philips, Charleston; and St. Michael's, Charleston. If an individual's probate record included inventories of multiple estates from different parishes, only those estates located within the aforementioned parishes were included in the analysis. For probates which dated to before 1746, and were therefore excluded from Holcomb's (1977) book, the author examined each entry in the volumes KK (1739-143), LL (1744-1746), and blank (1740-1743), pulling those probates which included a location in any of the aforementioned parishes. Any selected probates dating to 1739 from volume KK were included in the analysis of the 1740s Lowcountry. The overall Lowcountry probate sample dated from 1739 to 1781 and represented probate inventories from 266 plantations.

Identifying Plantations in Probate Inventories

As this dissertation aims to illuminate the intertwining of human and animal lives on eighteenth-century plantations, it was imperative to determine which probate inventories represented plantations and use only those inventories in further analyses. Criteria for identifying plantations in the probate inventories were established for each region.

For the Chesapeake sample, the probates of planters were identified as "Rural Estates" in the Probing the Past database[1]. Combined with Probing the Past's aim of collecting probates only from relatively wealthy individuals and its preference for probates from northern Virginia and central Maryland, this created a sample of Upper Chesapeake probate inventories[2] which represents genteel plantations remarkably comparable to the Upper Chesapeake plantations which provided the faunal assemblages used in this research.

It should be noted that a number of the probated rural Chesapeake estates included listings for quarters. In the Chesapeake, the usage of the term quarter is twofold. It describes the housing for the enslaved laborers, and it describes the ancillary plantations which served the home plantation (Carr and Menard 1989:411; Morgan 1998:105; Walsh 2010:251). The latter quarters often contained housing, barns, fences, and livestock. Because quarters existed to service the overall plantation, the livestock and implements listed separately under a quarter in the Chesapeake probate inventories were summed together with the livestock and implements listed for the deceased individual and/or the deceased individual's plantation.

To identify plantations in the Lowcountry probate inventories, the author created and implemented the "Lowcountry Plantation Pattern." Of the 580 eighteenth-century

---

[1] Thomas Hornsby's and John Carlyle's inventories were classified as "Non-Rural" in the database. However, both made explicit reference to plantations. As such, John Carlyle's 1780 inventory of "his Plantation called Bridekirk" and "Tarthorwald" as well as Thomas Hornsby's 1772 inventory of "Cherry Hall Plantation," "Porter's," Pohatan Plantation," and "Creek Plantation" were included in the analysis as plantations.

[2] The sample of probates analyzed in this dissertation included a single probate from a county which Walsh (2010) would consider a peripheral area of the Chesapeake and two probates from counties in the Lower Chesapeake. As over 98% of the probates were from the Upper Chesapeake, the probate sample is representative of Upper Chesapeake plantations.

probates which came from estates listed in and around Charleston, twenty-four described the deceased as a "planter." Additionally, the inventories of 42 individuals made explicit reference to plantations, such as Ralph Izard's 1761 inventory which includes listings for "the Plantation called Burton," and "at the Plant~ Tomotley." Based on the lowest common elements amongst the "planter" / "plantation" inventories, the "Lowcountry Plantation Pattern" states that an individual is a planter or an estate is a plantation if the probate for that individual or estate contains a minimum of 11 individual animals representing at least two different livestock species (cattle, horses, sheep, goats, and hogs) OR if it contains a minimum of 20 individual animals representing a single livestock species. As plantation tools or other items indicative of agriculture were not present on all "planter" inventories, the presence of numerous individuals and multiple species of animal was the clearest way to assess the agricultural potential of the estate, à la Orser's (1990:114) criterion of plantations as being used "primarily for agricultural production." Additionally, since nearly every probate from the parishes assessed included enslaved individuals, the presence or absence of enslaved laborers on a probate could not be used to distinguish a planter from a non-planter, as delineated in Orser's (1990:114) criterion of a plantation as having "at least two classes of people—those who work and those who direct."

The criteria of the "Lowcountry Plantation Pattern" were then applied to the remaining Lowcountry probate inventories which gave no explicit indications whether the estate listed was a plantation or not. Only those which fit either the 11 animals/ two species criterion or the 20 animals/ one species criterion were included in the analysis[3]. None of the Lowcountry probate inventories assessed in this dissertation contained any mention of quarters. There were, however, references to cowpens. Cowpens, though, focused on beef as a market commodity, often holding over one thousand head of cattle (see, for example, Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume T:566-568). Moreover, these centers of livestock production had a much different social and agricultural arrangement than did Lowcountry plantations, with enslaved laborers working primarily as cattle hunters and having an unprecedented amount of relative freedom. As such, cowpens were excluded from the probate analysis of Lowcountry plantations.

From the preceding criteria, a total of 437 plantations were identified in the eighteenth-century probate records from the Chesapeake and Lowcountry. The probates were grouped by decade and region to facilitate analyses of temporal change (Table 4).

Table 4. Number of Probate Inventories used in this Research

	1740s	1750s	1760s	1770s	1780s
Chesapeake	18	34	44	31	44
Lowcountry	45	52	73	86	10

[3] Six inventories were included in the Lowcountry sample as plantations although they did not conform to the Lowcountry Plantation Pattern. James Mathews was explicitly listed as a planter, but his 1767 inventory did not include any livestock or agricultural implements. Similarly, William Cattell, Jr.'s Savannah Plantation; William Elliot's Willtown Plantation, his Roterdam Plantation, and his Newholland Plantation; and Elizabeth Clapp's Washaw Plantation did not fit the pattern. However, since all made explicit reference to planters or plantations, they were included in the sample.

Identifying Working Animals in Probate Inventories

Identification of working animals in the probate records was much more straightforward than the identification of plantations in the probates. Many probates included listings such as “plow oxen” or “riding horses,” indicating not only the presence of working animals but also the tasks which these animals performed. In organizing the data from the plantation probate inventories, the categories employed within the probates were maintained as best as possible. However, to conduct the comparative analyses, more generic terms were used. Working oxen, working steers, draft oxen, draft steers, plow oxen, stall-fed oxen, and oxen were grouped into the category of “total oxen referenced.” This total number of oxen referenced was included in the “total number of cattle” from each plantation. Horses were grouped according to the labor described in the probate, leading to categories of riding horses, chair horses, cart horses, coach/chariot/carriage horses, wagon horses, plow horses, draft horses, and work horses. In some Lowcountry probates, horses were listed as “plantation horses”; these horses were recorded under work horses as the history of the current McCurdy Plantation Horse breed indicates that they were bred as a working animal (Dutson 2005:165-167). All of the laboring horses and any horses listed in the probate as breeding animals or listed without a descriptor were totaled to provide the “total number of horses” for each plantation.

At times, the probate inventories only recorded nominal information on the quantity of animals or items. In these instances, the language of the probate was maintained, and “stock,” “parcel,” or “lot” was recorded in the spreadsheet. These quantities were not able to be incorporated into analyses of percentages or averages in the two regions but were incorporated into analyses which examined presence or absence of certain animals or items.

Additionally, the presence of species-specific equipment in the probates such as ox carts, horse carts, ox wagons, ox plows, horse plows, yokes, saddles, bridles, and harnesses indicates the use of specific types of working animals for completing tasks. The probate inventories also included references to a large number of horse-drawn vehicles, using a wide variety of terms. To simplify the analysis, horse-drawn vehicles were grouped according to the general purpose and size of the vehicle. Chairs, riding chairs, chaises, sulkies, curricles, and kittereens were grouped together as these vehicles were predominately light, two-wheeled vehicles meant for a single occupant (Berkebile 1978; Evans 1997:227). Coaches, landaus, carriages, chariots, and post-chaises were grouped together since these were four-wheeled passenger vehicles that could hold four or more individuals (Berkebile 1978). Phaetons remained in their own category as these four-wheeled, open-bodied vehicles carried only two passengers and were driven by one of the passengers (Berkebile 1978; Felton 1794:44). Carts and tumbrels were placed in the same category because they were both two-wheeled vehicles used for hauling freight; namely, manure in the case of the tumbrel (Berkebile 1978). Wagons and drays were also freight vehicles, but these each remained in their own categories. Wagons were four-wheeled heavy vehicles for hauling agricultural products while drays were the heaviest of the commercial freight carriers and usually were used only in and around cities (Berkebile 1978).

Identifying Working Animal Husbandry in Probate Inventories

Probate records provided evidence on animal husbandry which was complementary to that supplied by the zooarchaeological assemblages. The number of horse bells, cow bells, branding irons, and marking irons were recorded from each plantation probate. These were all implements used in maintaining livestock herds as they were used to locate, identify, or prove ownership of horses and cattle. Furthermore, certain phrases used in the probate entries relay information on the feeding and grazing practices of eighteenth-century plantations. Instances of "stall-fed oxen" or "horses in the woods" were recorded and tabulated from each region. Finally, levels of detail in the probates were noted as they reveal the level of human involvement in raising working and non-working livestock. Those inventories which meticulously list the ages of the animals suggest a more hands-on approach to animal husbandry than those which simply lump all cattle together as "stock of cattle," for example.

Conclusions

Uncovering the animal landscape of eighteenth-century Chesapeake and Lowcountry plantations requires a two-pronged approach incorporating data from archaeological and historical records. Used alone, each data source presents its own unique biases and ambiguities. However, by using multiple datasets as independent sources of information, one can explore these biases and use each dataset in the interpretation of the other. For this two-pronged approach to be balanced, though, the datasets must be comparable. As such, all archaeological, zooarchaeological, and primary historical data represent daily life on plantations owned by relatively wealthy individuals from the second through the fourth quarter of the eighteenth century. Furthermore, the probates and the faunal assemblages represent plantations in the Upper Chesapeake subregion of the Chesapeake and the outer coastal plain of the Lowcountry.

The methodologies outlined above were applied to these datasets to illuminate the intricacies of human and animal interactions on eighteenth-century plantations. After identifying human and animal interactions, one can begin to build an understanding of the social landscape of plantations and working animals' positions within this landscape. To do this, working animals first had to be identified in both the zooarchaeological and the historical records. Working cattle were identified zooarchaeologically through pathological and osteometric analyses, while the few equine remains present were assessed for evidence of labor by analyzing pathologies. Fortunately, the language used in probate inventories often clarified the labors which these working oxen and working equines supplied.

To assess the entwining of human and animal lives on eighteenth-century plantations, more nuanced approaches were necessary. Age and sex distributions garnered from the zooarchaeological assemblages illuminated basic strategies for raising and maintaining cattle on the plantations. Historical documents provided further evidence on how working animals were raised in both regions through the inclusion of certain implements or use of certain phrases which indicate herding or grazing practices. Further aspects of the human-animal relationship were assessed through personal writings, archaeological and architectural materials, and maps of individual plantations. These data provide more qualitative and, at times, anecdotal information pertaining to the animal landscapes of each region, especially as they pertain to the integration of working animals into the social realm of humans. Such sources provide essential information on the social hierarchies present on the plantations, the physical layout of the plantations, and how people moved about and interacted with animals on a daily basis. Through these, one is able to glean an understanding of working animals' roles within the physical and social landscape of the plantation.

The following chapters exhibit the application of these methodologies to datasets from the Chesapeake and the Lowcountry. In the next two chapters, these methods are applied directly in the identification of working oxen and working equines, respectively. Chapter 5 marks the first application of Bartosiewicz et al.'s (1997) methodology to cattle remains from historic assemblages in North America.

Chapter 5. Working Oxen in the Chesapeake and Lowcountry

Oxen were one of the first species of animal to enter into a working relationship with humans. Aurochsen (*Bos primigenius*) gave rise to domestic cattle (*Bos taurus*) around 6,200 BCE in western Asia and southeastern Europe, where people incorporated the domestic cattle into cuisine and into rituals as sacrifices (Clutton-Brock 1999:81-90). Humans and domestic cattle began working alongside each other slightly later. The oldest direct evidence for the use of draught oxen is found in the Near East, where a clay tablet dating to 4,000 BCE depicts cattle and a plow. However, the use of oxen may be older as there is evidence of deep plowing in southwestern Iran by 5,000 BCE (Bartosiewicz et al. 1997:9). In the millennia since, oxen's working lives have spread both in geographical location and in the diversity of tasks they have performed.

This chapter explores the working lives of oxen on eighteenth-century plantations in the Chesapeake and Lowcountry, assessing how the oxen influenced the labors they performed in both regions. Within each region, zooarchaeological and historical evidence illuminate the presence of oxen on plantations and the specific labors they performed on those plantations.

Why Oxen?

Oxen's physical strength, hardiness, and ability to supply products as well as labors position them as an ideal draught animal in numerous environments. Although bovines in general are weak chested, they have extremely strong shoulders, and oxen can exert a draught force of about 10% of their body weight. Horses can exert a draught force of about 15% of their body weight, but the overall heavier bodies of oxen means that the average ox can pull a greater burden than can the average horse (Barwell and Ayre 1982). Although able to pull heavier loads, oxen can rarely work as fast or as long as their equine counterparts. The average ox can work five to six hours per day, whereas the average light horse can work six to ten hours per day and the average mule over eight hours per day (Barwell and Ayre 1982:5). Additionally, oxen only walk at about 5-6 km/h while hauling on roadways and at 3-4 km/h while engaged in medium-depth plowing in heavy soils (Bartosiewicz et al. 1997:31). In their prime, a yoke of small oxen and a span of large draft horses exert a similar amount of pulling power, but the horses can pull roughly 50% more quickly (Garrett 1998:227; Langdon 1986:160).

Despite their slower speed and shorter workday than horses, oxen are better suited to working in certain conditions. On uneven terrain or in fields that are being cleared, oxen have a clear advantage over horses. With their shorter legs, oxen can maneuver around stumps or other low obstacles better than horses when hauling lumber or pulling plows (Garrett 1998:229-230). Such obstacles would have been commonplace in the newly reclaimed fields of the Chesapeake and Lowcountry. Not only are oxen better at maneuvering around obstacles than horses, they are also less prone to breaking legs on exceptionally difficult terrain (Garrett 1998:231). Additionally, oxen can plow through a greater range of soils than horses, who tend to get bogged down in heavy clay soils

(Langdon 1986:255). An ox's cloven hoof allows wet, loamy soils to pass between the two claws, whereas the closed hoof of the horse and the mule creates a suction in mucky soils which makes it difficult to move freely.

In addition to their strength and ability to work in a variety of environments, oxen are also arguably easier to train to draught than equines. Trainability itself can differ from ox to ox, depending on each individual's personality and life history. Relative to equines, however, oxen are easier to train and less excitable because of their shorter flight distance. The flight distance of an animal is the "radius of surrounding area within which intrusion provokes a flight reaction" (Grandin 1980:23), or how close you can get to an animal without it running away. Unhandled domestic cattle have a flight distance of approximately two to three meters (Grandin 1980:23; Kabuga and Appiah 1992:310), whereas unhandled domestic horses have a flight distance of three to five meters (Waring 1983:176-177). Perhaps the shorter flight distance of cattle is linked with their earlier domestication. Having 2,000 additional years of co-evolution with humans, domestic cattle are less skittish than domestic horses, making them easier to approach with a plow or cart in the training process. Also, unlike mule or horse drivers, ox drovers rarely walk directly behind the animals to drive them forward, an action which can mimic the movements of a predator and frighten the animals. Rather, drovers walk beside the shoulder of an ox and drive them from this position with a goad stick to signal starts, stops, and turns, thereby playing on cattle's natural instinct to respond better to visual rather than vocal signals for communication (Bouissou et al. 2001:115; Grandin 1980:21; Phillips 1993:36). All of these combine to make oxen a steady, reliable source of power on eighteenth-century plantations.

Perhaps oxen's greatest asset as a working animal, however, is their fuel efficiency. The thirteenth-century English agricultural writer Walter of Henley calculated that horses, especially cart horses, were more expensive to keep than oxen (Langdon 1982: 36), owing to their need for more supplemental feeding. As ruminants that can break down cellulose better, cattle are able to extract more nutrition from roughages than are horses. Cattle tend to graze at sunrise and sunset, with bouts of rumination throughout the rest of the day (Albright and Arave 1997:43; Phillips 1993:76). This means that working cattle require less food overall than working horses and can work further away from their grazing locations as they can simply chew their cud throughout the work day.

The fuel efficiency of cattle contributes greatly to the lower cost of maintaining oxen. In medieval England, oxen were the preferred work animal on feudal manors because manorial animals had to work extremely hard and required large amounts of extra feed. Since manorial lords asked large sums of money for hay and grass, the more dietary-efficient ox was the clear choice for a laboring animal (Langdon 1982). This mindset of oxen as the premier work animals came with the English colonists to the New World.

In seventeenth-century Virginia, oxen were the draught animal of choice. A 1620 census recorded that 1/3 of all cattle in Virginia were oxen primarily engaged in hauling lumber (Anderson 2004:111). By 1649 in Virginia there were "neer upon a hundred and fifty Plowers with many brave yoak of Oxen" (quoted in Gray 1933:162). However, plowing and the use of oxen never achieved the prominence that it had back in England, due to the differences in the systems of animal husbandry between the Chesapeake and the motherland (Walsh 2010:74-75), as shall be discussed throughout this dissertation.

In the six decades between the colonization of Virginia and that of South Carolina, English colonists realized they could not replicate the ideal English agricultural landscape complete with draught oxen and rolling hills dotted with sheep in the New World. Regardless, some cattle imported to the Lowcountry found themselves laboring at varying tasks, possibly breaking new ground for agricultural fields or hauling lumber (Garrett 1998). In the eighteenth-century, however, as rice rose in popularity, the use of oxen in the Lowcountry in rice cultivation or in other tasks was inconsistent, as shall be discussed in detail below.

Reconciling Issues of Sample Size

To assess oxen's social, physical, and economic impact on eighteenth-century plantations, it is imperative to separate the working cattle from the non-working cattle in the zooarchaeological and historical records. This dissertation analyzed 362 cattle lower limb bones and bone fragments from sites in the Upper Chesapeake and 160 cattle lower limb bones and bone fragments from the Lowcountry's outer coastal plain. The sites which provided the faunal remains represent some of the richest archaeological sites in British North America and the faunal remains some of the largest eighteenth-century zooarchaeological assemblages. Previous studies using Bartosiewicz's et al.'s (1997) methodology for identifying draught cattle used upwards of 300 or 500 cattle bones from a single site (e.g., Bartosiewicz et al. 1997; Miller 2003), but the multi-site comparative approach of this dissertation counteracts many of the issues associated with small sample sizes. Bowen (in Walsh et al. 1997; 1998) and Reitz and Ruff (1994) are successful examples of multi-site analyses in which relatively low sample numbers from individual North American sites can be productively studied when combined with samples from other sites and/or compared with samples from other sites. For example, Reitz and Ruff (1994) analyzed changes in cattle size using a total of 536 bones from four different regions in North America and the Caribbean, averaging 81 to 226 individual bones from each region. Furthermore, the inclusion of historical data from the sites and from throughout the two regions strengthens the analysis and interpretation of these relatively small samples of faunal remains, ultimately illuminating the working lives of oxen on eighteenth-century plantations in the Chesapeake and Lowcountry.

Working Oxen on Eighteenth-Century Chesapeake Plantations

As the eighteenth century progressed, Chesapeake planters, especially those in the Upper Chesapeake, increased their efforts in the plow cultivation of mixed grains such as wheat while simultaneously reducing their efforts in tobacco production (Carr and Walsh 1988:148; Gray 1933; Walsh 2010), suggesting that draught animals, such as oxen, became increasingly important in the production and distribution of agricultural products.

Cattle lower leg bones and historical documents should reflect this increase in the presence of oxen through more severe pathologies and increased mention of oxen, respectively. Fortunately, the Chesapeake provided ample data in terms of both zooarchaeological specimens and probate inventories.

Identifying Working Oxen in the Chesapeake

Of the 276 complete specimens analyzed from the Chesapeake for this dissertation, only five specimens, or 1.8%, were significantly pathological enough to be considered outliers[4] (Figure 4). Three of the significantly pathological second phalanges came from the deposits at Oxon Hill Manor while the highly pathological first phalanx and the other severely pathological second phalanx were recovered from Mount Vernon. When examining Figure 4, it appears that third phalanges had more severe pathologies than any of the other elements; the range extended from a PI of .000 to .429 and the interquartile range, or where half of all of the PIs fell, was higher than in any other element. However, this is the nature of the calculation of the PI for multiple elements; each element has its own pathologies which are scored and therefore has its own equation. Third phalanges only have three pathologies which can be scored for them. In contrast, metacarpals have nine pathologies to be scored. As the PI calculation is

---

[4] Boxplots used throughout this dissertation were created using SPSS. In these figures, the brackets reflect the range of PIs; the boxes reflect the interquartile range, or where 50% of the PIs fall; and the dark black lines within the boxes reflect the median PI values. Outliers, or PI values which are greater than 1.5 times the interquartile range, are represented by the open circles. These outliers represent extremely large PIs and, therefore, the most likely specimens to have come from draught oxen.

essentially an average of pathological severity, a pathological score of two in a third phalanx has a greater impact on the PI than does a score of two in a metacarpal. Therefore, PIs should only be compared within each element and not between different elements. This underscores the fact that the outliers in the boxplots are significantly pathological, even if their PIs are less than the upper limit of the range of PIs on a different element. Looking at the outliers of each individual element, then, it appears that oxen were a relatively minor component of the physical landscape of the eighteenth-century Chesapeake when compared to cattle not used for draught exploitation. However, by exploring temporal differences within the eighteenth century, one can appreciate oxen's contributions to the changing physical and social plantation landscape more readily.

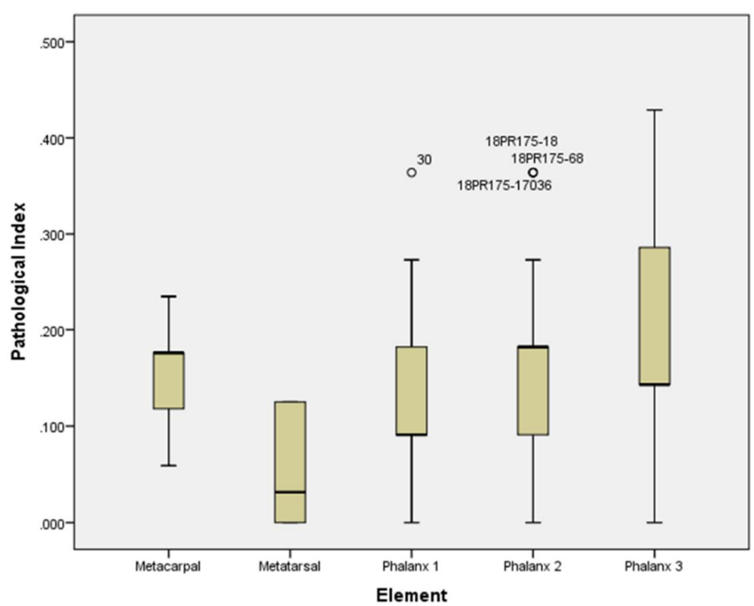


Figure 4. Pathological Indices (PI) of complete elements from the eighteenth-century Chesapeake.

Temporally, the average pathological index for cattle lower limb bones increases only slightly through time. This increase in average severity of pathology is also dependent on the element assessed (Figure 5). Not every element was able to be assessed from each quarter of the eighteenth century. Additionally, only five first phalanges and four second phalanges represent the nineteenth century. These only were included in the figure to see if overall trends continued or changed in the new century. Perhaps the most dramatic trend was observed in first phalanges, where there appears to be a stark increase in the presence of oxen from the third to the fourth quarters of the eighteenth century. Metacarpals exhibit a modest increase in pathology, and, thus, the likely presence of oxen, from the second to the third quarters of the eighteenth century. Most surprising are the elements which suggest a decrease in the presence of oxen, as expressed in the decreased average pathological severity of second and third phalanges from the second to the third quarter of the century.

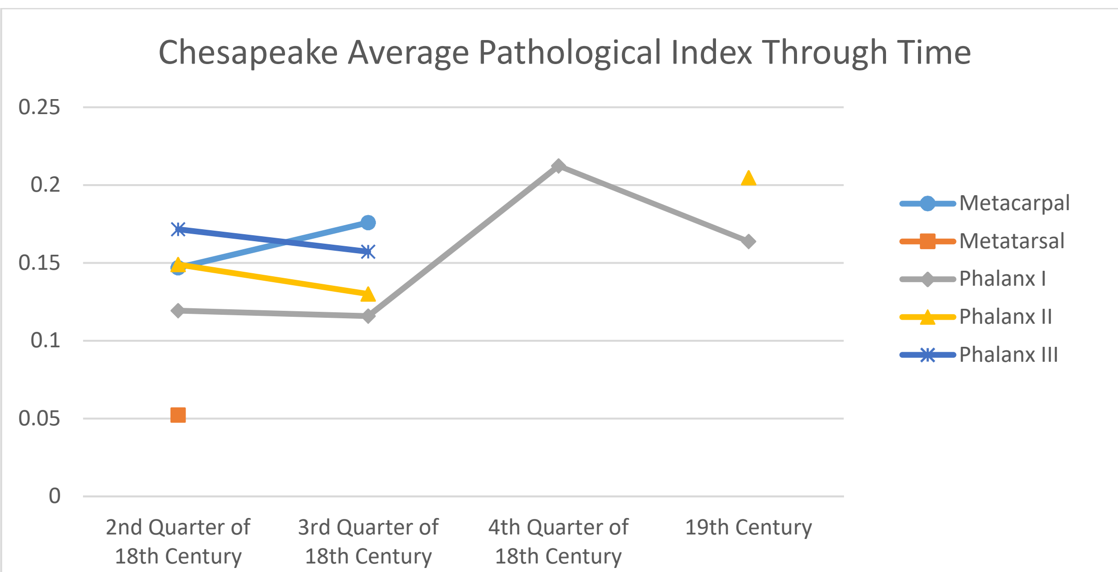


Figure 5. The average Pathological Index (PI) from Chesapeake specimens through time.

By examining each element individually the nuances of temporal change become more apparent. Also, by examining the metacarpals and metatarsals separately, one is able to utilize the Modified Pathological Index (mPI), which greatly increases the sample sizes of these elements. It is interesting to note that when sample sizes of metacarpals increase through the use of the mPI, a different trend appears than when simply looking at the Pathological Indices (PI) of complete metacarpals. Proximal and distal metacarpals both show an overall decrease in pathological severity—in terms of both the median PI and the interquartile range of PIs—from the second to the third quarter of the eighteenth century (Figures 6 & 7), the reverse of what the average pathological index of complete metacarpals indicated in Figure 5 above.

Rather than evidencing a decrease in the presence of oxen on Chesapeake plantations throughout the eighteenth century, the trends seen in the Modified Pathological Indices (Figures 6 & 7) likely represent a change in the overall system of cattle husbandry. This dissertation employs a methodology which uses severe pathological manifestations on lower limb bones as a means to identify draught cattle. However, it does not assume that traction activities are the only factor which can lead to the development of these pathologies. Rather, this research fully acknowledges that the degenerative and proliferative changes assessed through the methodology can be age-, weight-, and/or work-related (Bartosiewicz 1987; Boosman et al. 1989; Johannsen 2002). For example, if cattle were kept to an old age but did not labor as draught cattle, they still might develop exostoses or lipping. Therefore, this dissertation operates under the notion that elements with significantly severe pathologies (as seen as outliers in the boxplots) are the most likely specimens to represent draught oxen while the average pathological indices (as seen in the dark median line and the interquartile ranges in the boxplots) represent all of the cattle on the plantation. Consequently, the keeping of cattle to an older age will likely increase the observed average pathological severity of the sample of specimens.

Oxon Hill Manor provided over two-thirds of the metacarpals from the eighteenth-century Chesapeake, so it served as a case study to test whether the change in the modified pathological indices was most likely a result in changing overall cattle husbandry or a decrease in the presence of oxen at the plantation. Age profiles of all of the cattle remains from Oxon Hill Manor are not available (O'Steen 1986), but inventories taken at Oxon Hill in 1727, 1765, and 1775 list the ages of many of the cattle

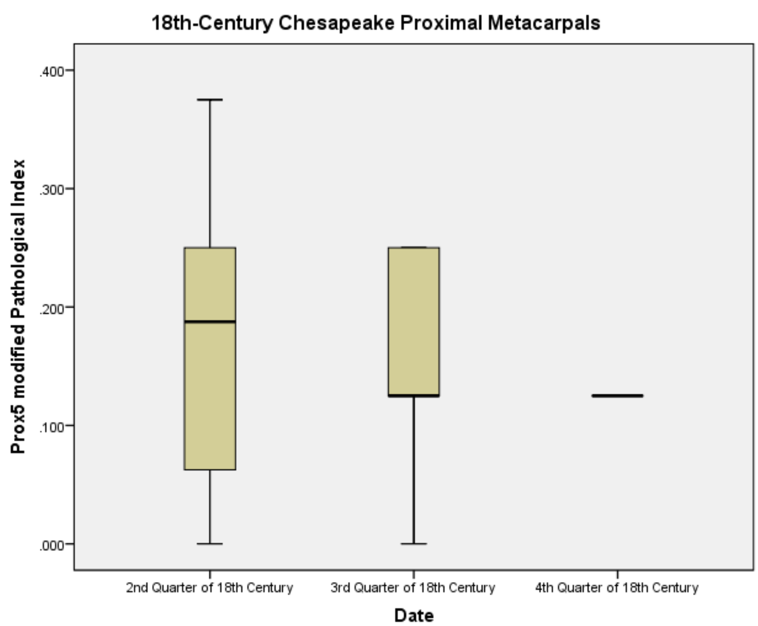


Figure 6. The Prox5 mPI of complete and incomplete Chesapeake metacarpals. (n=12, 6, and 1)

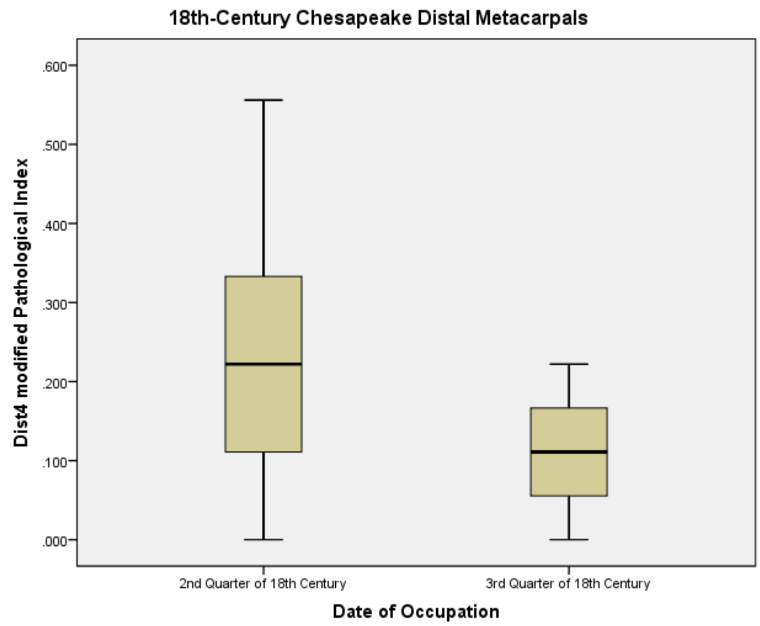


Figure 7. The Dist4 mPI of complete and incomplete Chesapeake metacarpals (n = 12 and 4)

living at the estate at those times and include total numbers of oxen. If the 1727 inventory is any indication, the Addisons kept numerous cattle over the age of five during the second quarter of the eighteenth century. The vast majority of these mature cattle were not kept for draught power or milk production. Such high numbers of aged cattle were not seen in the two later inventories but a small number of oxen were (Garrow and Wheaton 1986: Appendix 3). Therefore, the general trends in pathology seen on the metacarpals indicate changing husbandry strategies which affected all of the cattle on the plantation, not just those cattle which provided labor and, at times, social capital.

During the second quarter of the eighteenth century, many Upper Chesapeake plantations, Oxon Hill Manor included, continued to focus energies towards tobacco production, but further expanded into corn, livestock, and grain production. With the conversion of old tobacco fields into wheat fields, cattle were left with fewer prime grazing grounds. Although planters did grow corn and fenced their cattle on old fields to improve the fertility of the soil, they had not yet embraced the British husbandry techniques of pasture management and routine supplemental feeding. Therefore, it could take four or more years for the cattle to reach a proper weight for either market or at-home slaughter (Bowen 1996:106, 1999:362; Bowen in Walsh et al. 1997:43-60). The higher median modified pathological indices in metacarpals from the second quarter of the eighteenth century reflect the higher occurrence of animals kept to a more advanced age at that time period, as grass feeding on poor grazing grounds was likely practiced at Oxon Hill Manor. With the switch to focused mixed grain production in the mid-eighteenth century, many Upper Chesapeake cattle consumed the excess grains they helped to produce, were integrated into a system of crop rotation and pasture management, and reached market weight earlier. These later-eighteenth-century cattle did not live long enough to develop the arthritic pathologies observed on the remains from earlier in the century at Oxon Hill Manor.

The only other element to exhibit the downward trend of median pathological severity were second phalanges (Figure 8). However, this decrease is sharply reversed when the second phalanges from the nineteenth century are taken into account, as can be seen in Figure 5 above. All other elements from the Chesapeake reflect an overall upward trend in pathological severity through the eighteenth century (Appendix B). Despite the issues brought about by the multifactorial nature of lower leg pathologies, the overall trends in pathological severity across all elements suggests that there was indeed an increase—albeit not statistically significant—through time in the presence of oxen on eighteenth-century Chesapeake plantations.

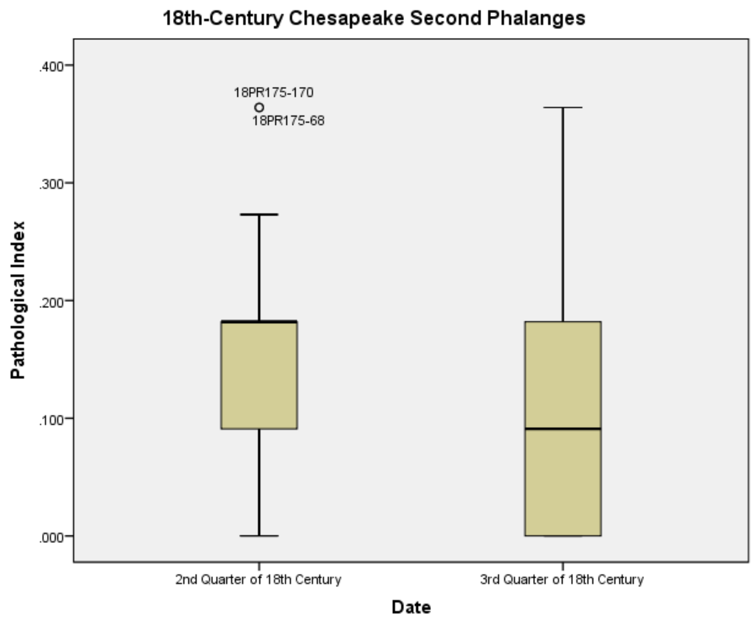


Figure 8. The Pathological Indices (PI) of second phalanges from the Chesapeake. (n = 66 and 21)

Interestingly, one of the most severely pathological elements from the Chesapeake region dates to the second quarter of the eighteenth century. 18PR175-257 is the distal half of a metacarpal from Oxon Hill Manor's Well Section D. Of all of the distal metacarpals from all of the eighteenth-century Chesapeake deposits, 18PR175-257 was the only outlier when evaluating the distal modified pathological index, with an mPI of 0.556 (Figure 9). With some of the highest pathology scores of any of the metapodials assessed in this research and the correspondingly high mPI, 18PR175-257 likely came from an individual which performed relatively heavy labor throughout its lifetime (Figure

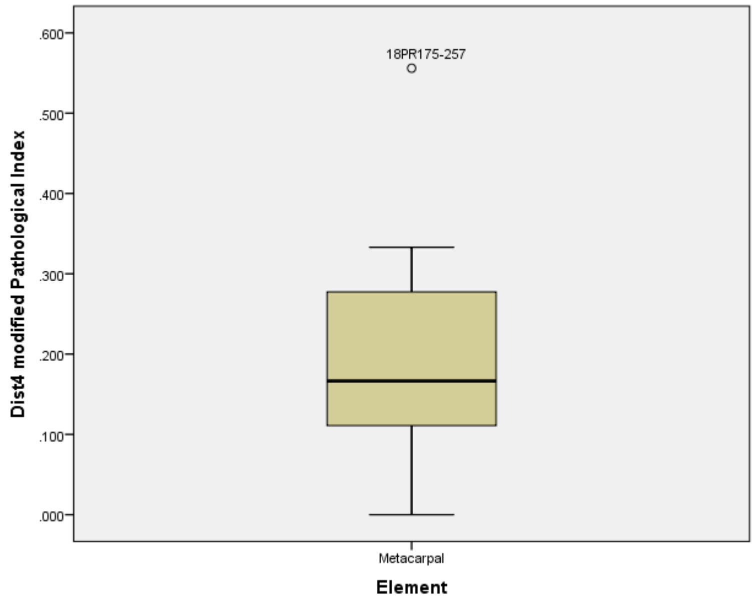


Figure 9. The Dist4 mPI of 18PR175-257 is a clear outlier when compared to all of the metacarpals from the eighteenth-century Chesapeake.

10). Additionally, the distal breadth of 18PR175-257 places it within the cluster of assumed male metacarpals from the Chesapeake region (Figure 11). As this specimen dated to the second quarter of the eighteenth century, it likely represents one of the early draught oxen at Oxon Hill Manor which served the estate after Thomas Addison's estate was inventoried in 1727. This ox may have helped to convert some of the old tobacco fields of Oxon Hill into wheat fields to replenish the soil nutrients, thereby taking the nutritious second-growth grazing grounds away from his non-working bovine counterparts. 18PR175-257 likely presents a period of change and adaptation at Oxon Hill Manor as the Upper Chesapeake became more fully diverged from the Lower Chesapeake and entered its own "Golden Age" (Walsh 2010) in the mid-eighteenth century with grains such as corn and wheat becoming the focus of plantation production and livestock, both working and non-working, benefitting from their inclusion in the grain cycle in a new iteration of domesticating the Chesapeake landscape.

Figure 10. Bone 18PR175-257 from Oxon Hill Manor, the distal metacarpal from a probable draught ox.

The keeping of animals to a more advanced age in the earlier part of the eighteenth century certainly muddies the waters of zooarchaeologically identifying draught oxen in the Chesapeake. However, isolated finds, such as 18PR175-257, suggest that identifying oxen in the region is possible through zooarchaeological methods. Additionally, the overall trends in the pathological indices of the majority of elements suggest an increased presence of oxen throughout the eighteenth century, as one would expect given the increased reliance on animal power for plow agriculture and the transportation of agricultural commodities later in the century (Carr and Walsh 1988:148; Gray 1933; Walsh 2010).

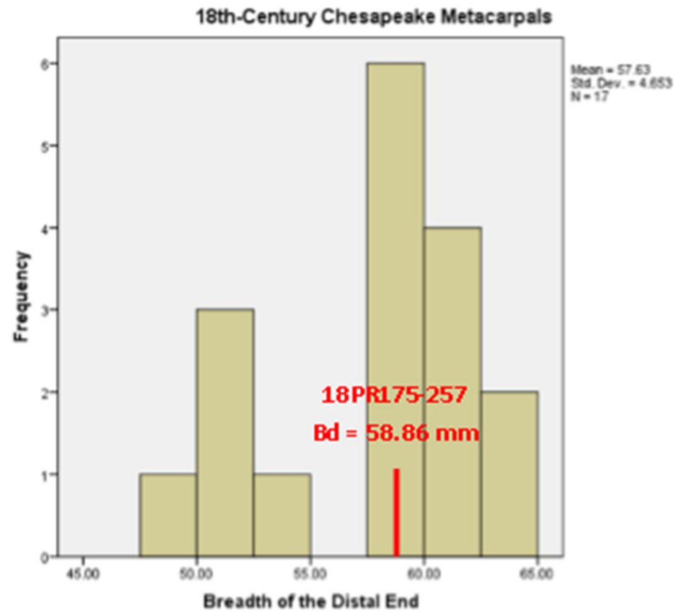


Figure 11. The breadth of the distal end of metacarpals from the Chesapeake region shows a biomodal distribution, suggesting cows are represented on the left and male cattle are represented on the right.

Probate inventories from the Upper Chesapeake also delineate a gradual increase in the presence of oxen, albeit much more clearly than do the faunal remains. This dissertation's analysis of Chesapeake probates shows that there is not only a dramatic jump in the percentage of plantations with oxen listed in the probates (Figure 12), but there is also a gradual increase in the percentage of total cattle which were listed as oxen in the inventories (Figure 13). At its highest in the 1780s, the percent of total cattle identified as oxen in the probates only reached 9.21% (Figure 13). Therefore, it should come as no shock that the faunal evidence did not reveal a high percentage of significantly pathological bones—and, therefore, a large percentage of draught cattle—from eighteenth-century deposits.

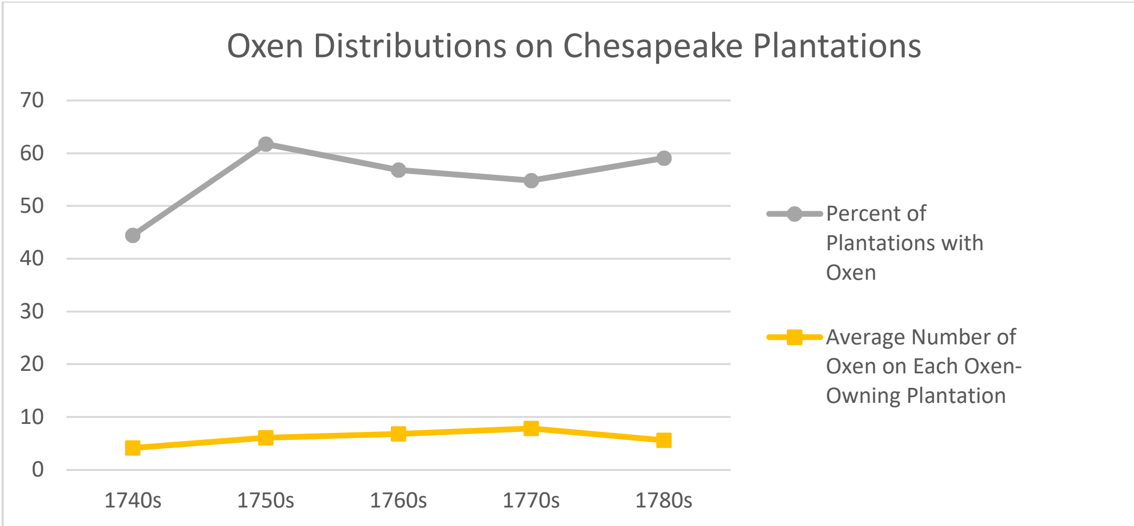


Figure 12. Oxen distributions on Chesapeake plantations, according to evidence in probate inventories.

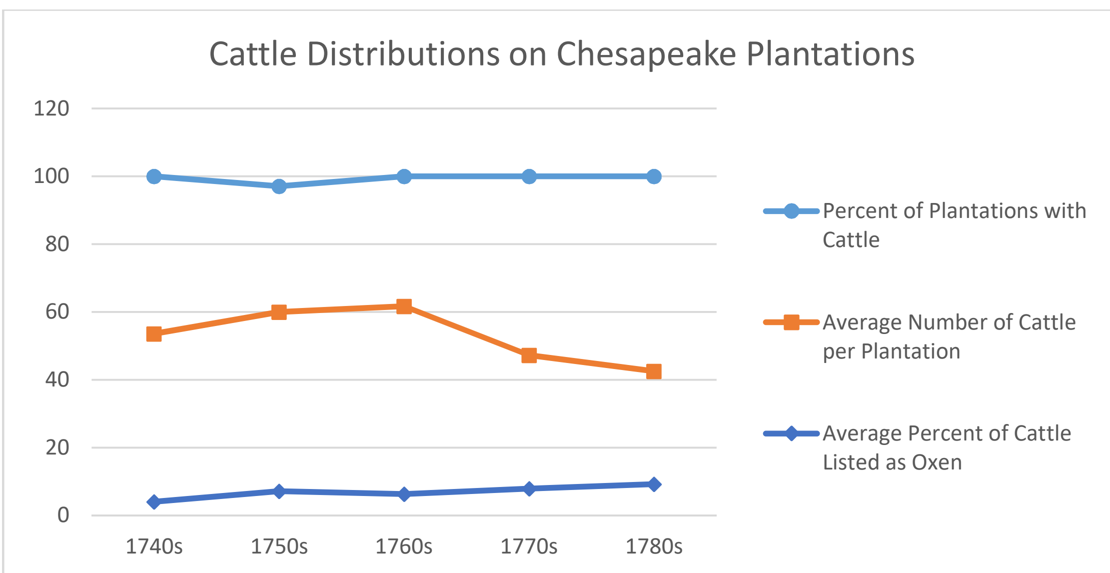


Figure 13. Distribution of all cattle on Chesapeake plantations, as evidenced in probate inventories.

The Labors of Oxen on Chesapeake Plantations

The zooarchaeological and historical evidence point to oxen being a relatively small percentage of the overall cattle population on eighteenth-century Chesapeake plantations. However small in number, though, these working animals helped to transform the overall landscape of eighteenth-century Chesapeake plantations, pulling plows, carts, harrows, and/or wagons.

In the probate inventories from the eighteenth-century Upper Chesapeake, the percentage of plantations with plows listed in the inventory increases consistently throughout the century, with fully 95.45% of plantations in the 1780s having plows listed in their inventories (Figure 14). In some of the probate inventories, plows were specified as either "ox plow" or "horse plow." In the 1740s and 1750s, ox plows were the only species-designated plows listed in the inventories. Horse plows were first mentioned in the 1760s, which coincides with the last mention of ox plows.

Throughout the eighteenth century, it is likely that horses gradually replaced oxen as the plow animal of choice in the Chesapeake. Oxen are better suited than horses to plowing in heavy, difficult soils (Langdon 1986:100, 255). In the first half of the eighteenth century, when many Upper Chesapeake planters were routinely converting their poorest performing tobacco fields into grain fields, these old fields first had to be plowed under before the grains could be planted. By the time planters earnestly began focusing on grain production in the mid-eighteenth century, many of their fields had already been plowed at least once. Horses, which are well-suited to plowing in light soils, were now able to showcase their speed and stamina over oxen in the easily-worked

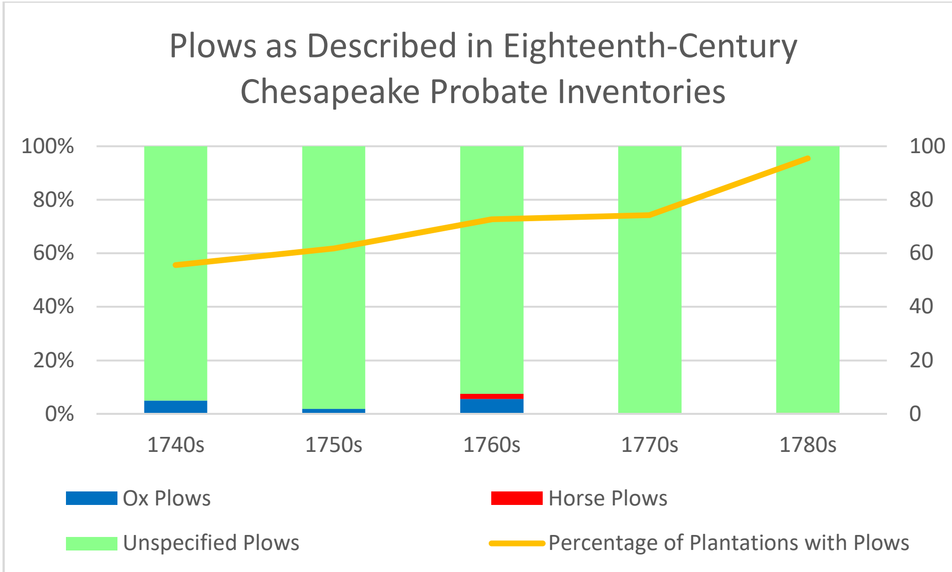


Figure 14. Distribution of plows on eighteenth-century Chesapeake plantations, as evidenced in probate inventories.

grain fields (Langdon 1986). In a 1794 letter, George Washington ordered his farm manager William Pearce to "execute your other plowing well, & in season, with your present force of horses, aided by Oxen; which, in the Eastern states is almost the only teams they plow with" ([PGWDE] 1794). Thus, oxen at Mount Vernon were somewhat supplemental to the plowing animal workforce, which seems to be the norm amongst late-eighteenth-century Upper Chesapeake planters.

Despite the takeover of horses as the chief puller of plows in the Chesapeake, oxen continued to leave an indelible mark on the plantation landscape as cart animals. Grains are more difficult to haul to the barns by hand than tobacco, so carts were employed to move the commodity from the field to the barn and from the barn to the market (Carr and Walsh 1988: 148). Also, as grain production required less manual labor, plantations increasingly branched out into other economic ventures such as milling, spinning, or fishing (Carr and Walsh 1988; Walsh 2010), all ventures which required carts to move goods and products across the plantation and to the market.

Similar to plows, carts increased in popularity on Upper Chesapeake plantations as the century progressed (Figure 15). However, the trends in the animals associated with carts are reversed from what they were with plows, with oxen gradually becoming the preferred draught animal for pulling carts. The slow, steady gait of oxen coupled with their tranquility (e.g., Grandin 1980:21-23) meant that less grain would be lost from the carts due to sudden changes of course or bouncing quickly along an uneven road if oxen were pulling the cart rather than horses. Also, by having side-driven oxen rather than rear-driven horses pull the carts, handlers could walk beside the animal rather than having to sit behind the animal, perching on top of the load or taking up some of the space in the cart, making it a less efficient arrangement for hauling goods on and around the plantation.

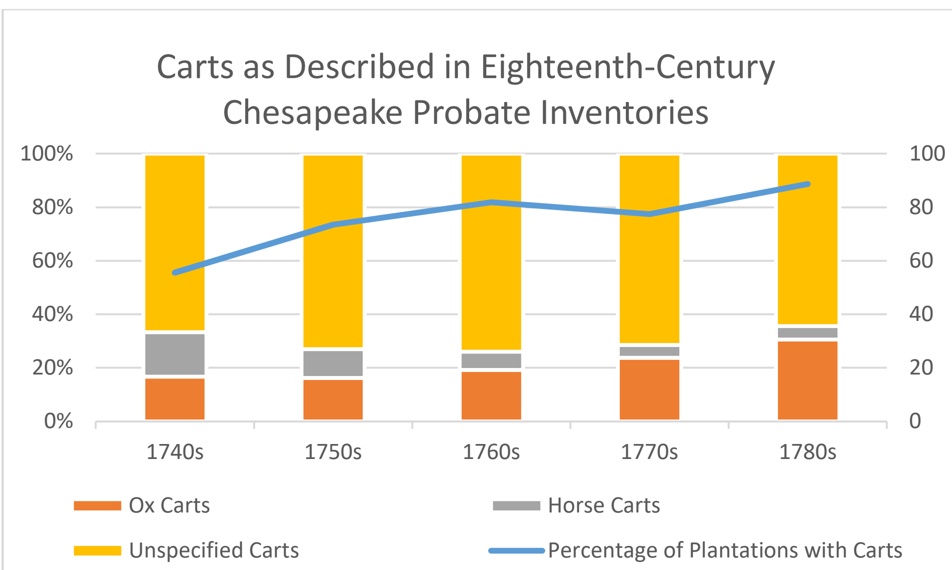


Figure 15. Distribution of carts on eighteenth-century Chesapeake plantations, as evidenced in probate inventories.

At Mount Vernon, George Washington appreciated these assets of oxen. In his 1785-1786 “Notes & Observations” on agriculture, Washington wrote that carts

> should be well supplied with Oxen, that by shifting them they may be always in good heart, & do the work well, without grain, or extra feed. They should carry rails, or other Materials for fencing to the spot where the fences are to be erected in the Winter (whilst the grd is frozen) that they may not be interrupted in Carting out the dung in the Spring, before the last plowing is given to the land. [[GWPLC] 1785-1786]

Oxen were the only animals specifically listed as pulling carts at Mount Vernon from 1785 to 1793 ([GWPLC] 1785-1786; [MVDA], Farm Combine Document, Farm Reports, 1789-1798). As the eighteenth century drew to a close at Mount Vernon, though, horse and mule carts gradually replaced ox carts in popularity ([MVDA], Farm Combine Document, Farm Reports, 1789-1798). This, however, is likely due to Washington’s personal preference, his considerable wealth, and his budding mule-breeding operation at the estate, as shall be discussed in the next chapters.

Besides plowing in the first half of the eighteenth century and carting in the second, oxen pulled wagons and harrows on Chesapeake plantations. In the 1780s, 30 total wagons were recorded from the 44 inventories, by far the largest number of wagons from any decade. Of these 30 wagons, only two were listed as ox wagons and six as horse wagons. With their four wheels (Berkebile 1978:296), wagons are more stable than carts and are less affected by the quick, sudden movements which horses can make.

Harrowing, on the other hand, involved dragging a large, heavy rake across newly plowed fields to break up the clods and smooth the soil. The probate inventories from the Chesapeake do little to inform our knowledge of harrowing practices in the region, but George Washington's farm reports indicate that oxen were the preferred animals for harrowing ([MVDA], Farm Combine Document, Farm Reports, 1790-1793; [GWPLC] 1785-1786). With their sturdier build than equines, oxen were better-suited to traversing these rough, rutted fields while harrowing.

Overall, oxen were vastly outnumbered by their non-working bovine counterparts on eighteenth-century plantations in the Upper Chesapeake. Making up less than 10% of the total cattle population, these working animals nonetheless transformed the overall plantation landscape. Through their plowing and ground-breaking in the first half of the eighteenth century and their cart-pulling in the second half, oxen helped to transform Chesapeake agriculture from tobacco-centric to more sustainable and profitable grain production by the last quarter of the eighteenth century. Next, this dissertations explores how oxen helped to transform eighteenth-century plantations in the Lowcountry.

Working Oxen on Eighteenth-Century Lowcountry Plantations

Unlike oxen in the Chesapeake, the presence of oxen on Lowcountry plantations is often diminished in the secondary literature (e.g., Carney 2001; Littlefield 1991). Writing of Lowcountry rice cultivation, Carney (2001:118) even states, "Only in the last decades of slavery were animals brought into use for plowing and transport of materials." Through the examination of faunal and historical evidence, however, this dissertation reveals the extent to which oxen did labor on eighteenth-century Lowcountry plantations in the outer coastal plain and the types of labors those oxen performed.

Identifying Working Oxen in the Lowcountry

The Lowcountry sites used in this dissertation returned 90 complete cattle lower limb bones. Of these, three (or 3.33% of the total sample) were significantly pathological (Figure 16). These three specimens all came from Drayton Hall, but represent two distinct time periods at the site: the second quarter of the eighteenth century and the third quarter of the eighteenth century. Again, third phalanges, by nature of the calculation of the PI, appear to have more severe pathologies than the other elements because of their relatively high median PI and interquartile range of PIs. Rather, bone 1944, the outlying third phalanx, is the only true severely pathological third phalanx. Because the PIs of different elements cannot be adequately compared to each other, it is imperative to explore each element separately. Moreover, by exploring the temporal trends for each element individually, a clearer picture emerges of the oxen on Lowcountry plantations at different points in the eighteenth century.

The specimens from the eighteenth-century Lowcountry exhibited dissimilar trends in the average pathological index through time (Figure 17). The most dramatic changes in the average pathological index were observed in third phalanges, which showed a sharp decline in the severity of pathologies through time, suggesting a decrease

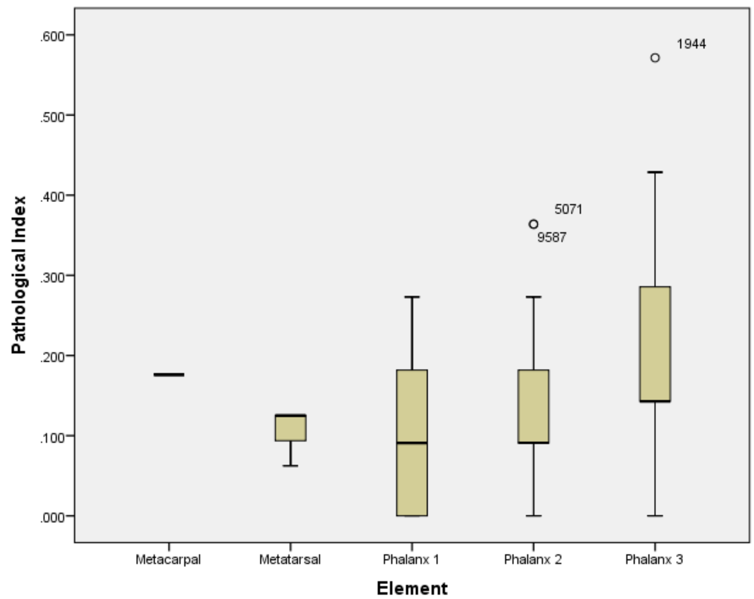


Figure 16. The Pathological Indices (PI) of complete elements from the eighteenth-century Lowcountry.

in the number of oxen on plantations as the century progressed. However, this is likely a case of sample size skewing the visual representation. A single third phalanx was analyzed from the fourth quarter of the eighteenth century, compared to 18 and 11 third phalanges from the second and third quarters, respectively. This single third phalanx did not exhibit any pathological modifications, giving the appearance that oxen, or at least severe pathologies, were non-existent on late-eighteenth-century Lowcountry plantations. From the second and third quarters of the eighteenth-century, however, sample sizes were more uniform, allowing for first phalanges, second phalanges, and metatarsals to show a slight increase in pathological severity. Complete metacarpals were only recovered from the deposits dating to the second quarter of the eighteenth century and are thereby unable to illuminate temporal trends in pathological severity and draught oxen usage in the Lowcountry.

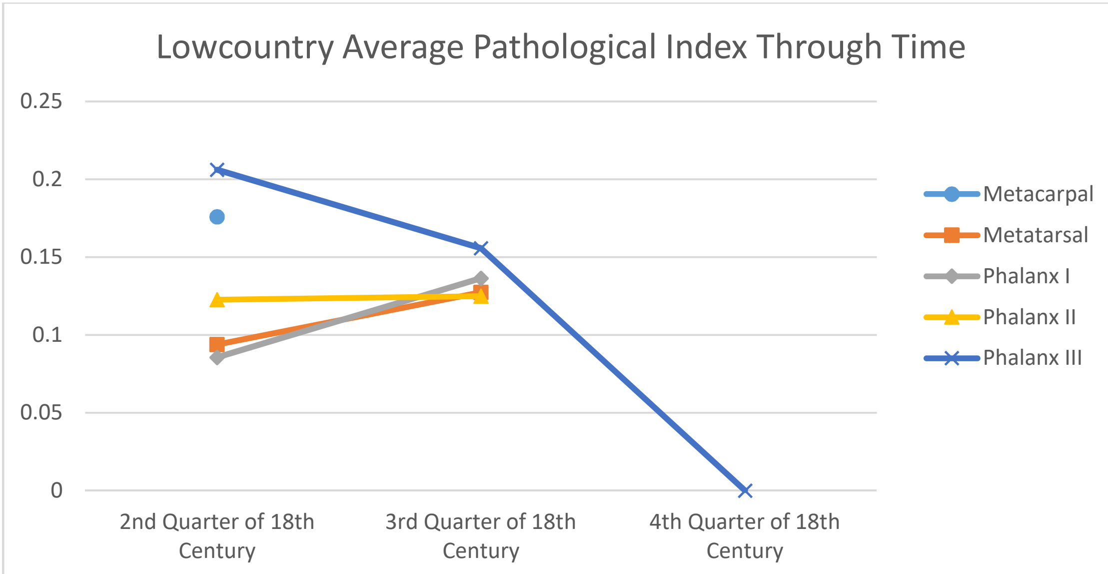


Figure 17. The average Pathological Index (PI) from Lowcountry specimens through time.

To increase the sample sizes of metacarpals and metatarsals from the second and third quarters of the eighteenth centuries, the Modified Pathological Index (mPI) was applied to complete and incomplete specimens. In the proximal metacarpals, a single specimen represents the third quarter of the eighteenth century, making any conclusions based on the proximal metacarpals tenuous at best (Appendix B). However, the distal metacarpals display a decrease in pathological severity from the second to the third quarters of the eighteenth century (Figure 18). None of the metapodials from the Lowcountry exhibited significantly or even marginally high modified pathological indices, as evidenced by the lack of outliers and the relatively low upper limit of the range, so these elements appear to indicate that oxen were not notably present on eighteenth-century Lowcountry plantations.

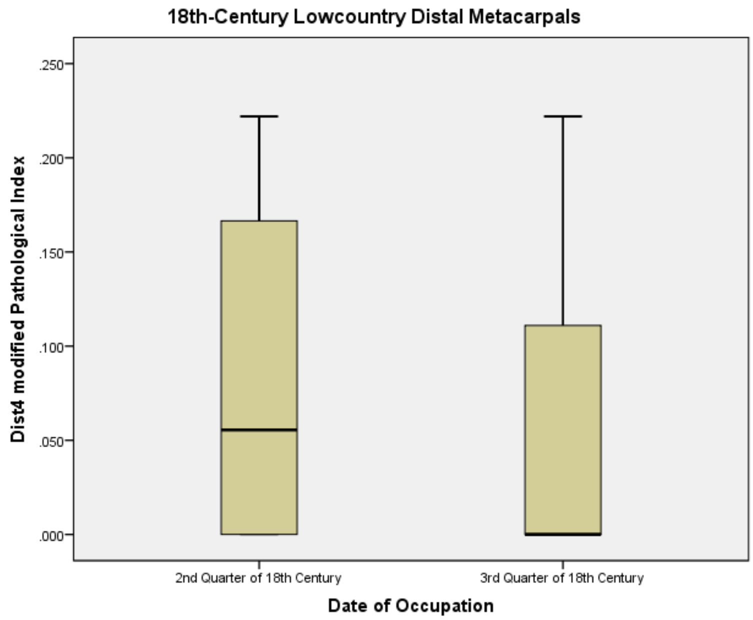


Figure 18. The Dist4 mPI of complete and incomplete Lowcountry metacarpals. (n=4 and 3)

The phalanges from the Lowcountry, however, do show specimens with significantly high pathological indices. Outliers are observed in first and second phalanges from the second quarter of the eighteenth century (Figure 19 and Figure 20) and in a third phalanx from the third quarter of the eighteenth century (Figure 21). The prevalence of significantly pathological specimens is never more than 12% of the sample for that particular element and time period. Thus, draught oxen were likely present on Lowcountry plantations, but, just like in the Chesapeake, never constituted the majority of the cattle there.

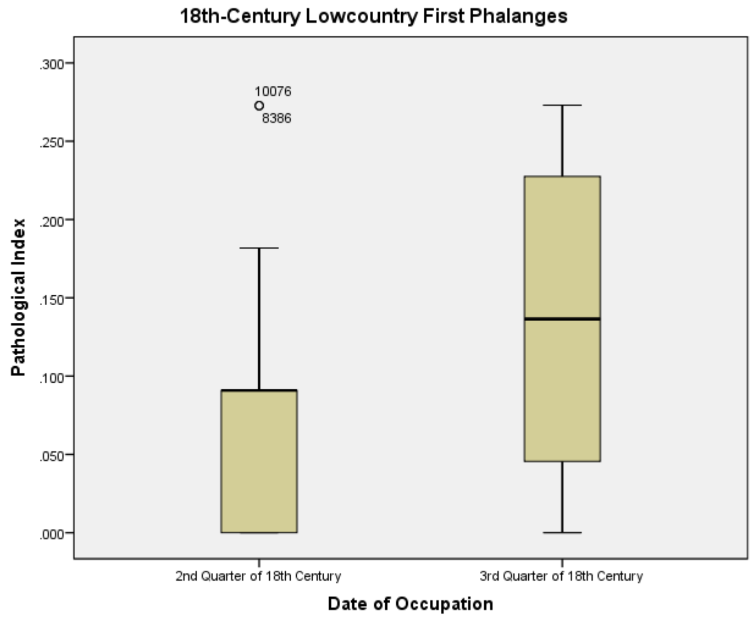


Figure 19. The PI of complete Lowcountry first phalanges. (n= 17 and 8)

Figure 20. The PI of complete Lowcountry second phalanges. (n=20 and 10)

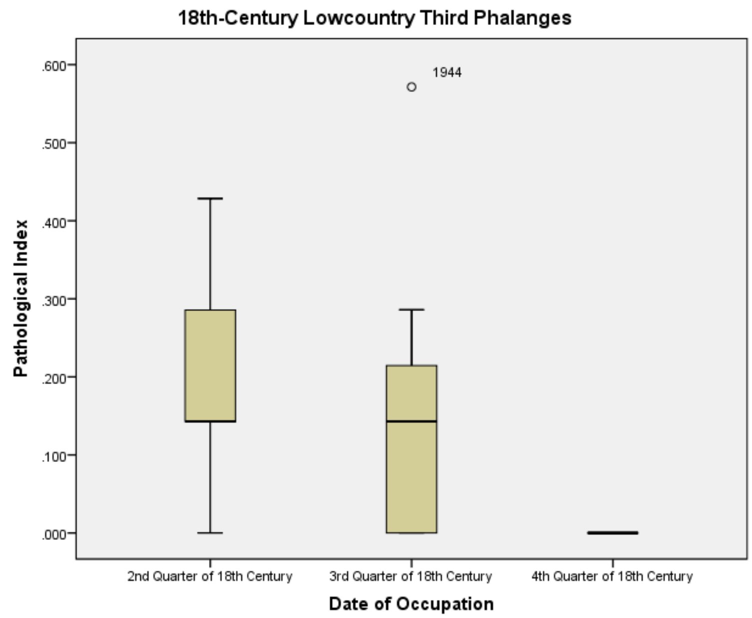


Figure 21. The PI of complete Lowcountry third phalanges. (n=18, 11, and 1)

It is interesting to note the temporal differences in the distribution of severe pathologies. More severely pathological elements are present in deposits from the second quarter of the eighteenth century than in the third, but the element with the highest overall pathological index dates to the third quarter of the eighteenth century. The second quarter of the eighteenth century was when the system of tidal rice production was perfected in the Lowcountry (Carney 1996:113; Weir 1983:145). Perhaps the significantly pathological elements from this time period represent oxen who were employed in clearing the woodlands for rice cultivation at Drayton Hall before the estate became more of a country seat than a commercial plantation. The significantly pathological third phalanx from the third quarter of the eighteenth century may have come from an ox which worked plowing under rice stubble after harvest, plowing the fields used for growing provisions on the plantation, carting products or lumber across the plantation, or any other traction tasks which may have been needed at Drayton Hall later in the eighteenth century.

While the zooarchaeological record suggests an almost negligible decrease in the usage of oxen in the Lowcountry throughout the eighteenth century, the historical record shows an increase. Probate inventories analyzed in this dissertation indicate that the number of plantations in the outer coastal plain with oxen increased as the eighteenth century progressed (Figure 22). This increase is most dramatic between the 1740s and the 1760s. The apparent decrease in oxen during the 1780s is likely a reflection of the small sample size for that time period. Only 10 inventories from the 1780s were able to be analyzed, compared to 45 to 86 inventories for each of the other four decades.

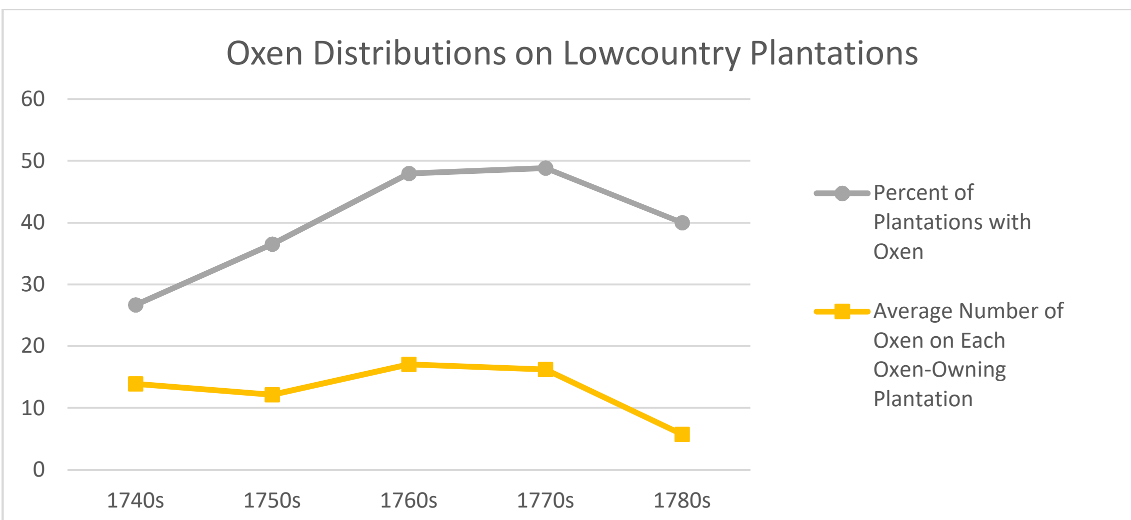


Figure 22. Oxen distributions on Lowcountry plantations, according to evidence in probate inventories.

Similarly, the percentage of total cattle on each plantation which were listed as oxen gradually increased throughout the century (Figure 23). Thus, it appears that while the number of Lowcountry plantations which kept oxen was never above 50%, those that did have oxen had a large number of them, resulting in 6-13% of the Lowcountry plantation cattle population performing labor on those plantations. Therefore, the presence of oxen on eighteenth-century plantations was less uniform in the Lowcountry than it was in the Chesapeake. This suggests that oxen in the Lowcountry were less integrated into the major agricultural endeavor of the region—rice production—than they were in the Chesapeake where wheat and other small grains required plowing and carting. Additional analysis of probate records reveals the activities that oxen were performing on eighteenth-century Lowcountry plantations, thereby further illuminating oxen's roles in the agricultural and social landscapes of the region.

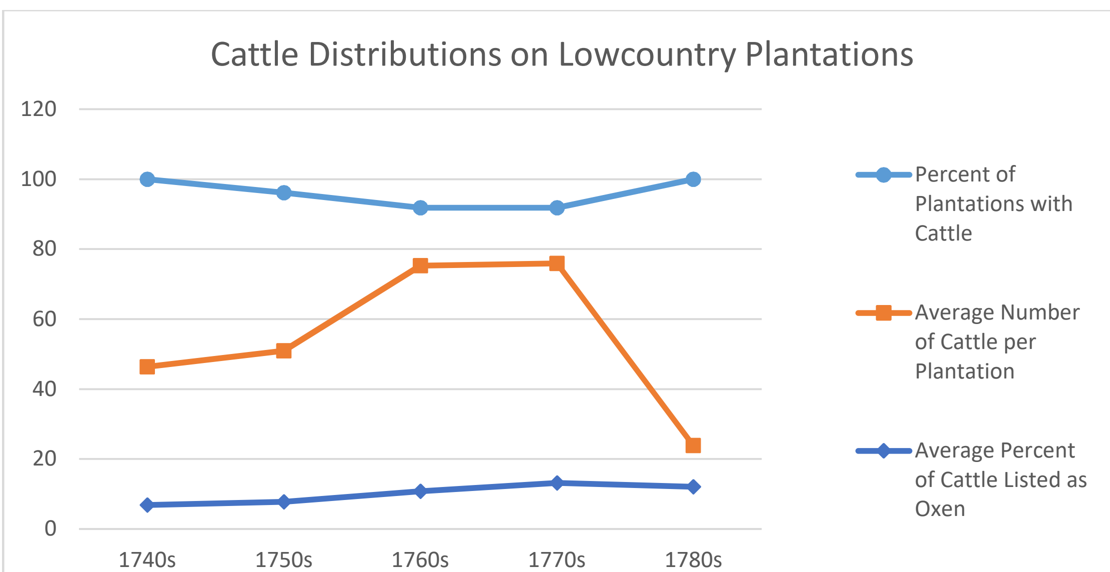


Figure 23. Distribution of all cattle on Lowcountry plantations, as evidenced in probate inventories.

The Labors of Oxen on Lowcountry Plantations

In the eighteenth-century Lowcountry, plowing was not as vital to the production of cash crops as it was in the Chesapeake. As such, plows were not as common in the Lowcountry probate records analyzed, occurring on roughly 8-20% of the plantations at different points in the eighteenth century. This is consistent with Morgan's (1998: Table 6) research, in which he found that between 1730 and 1765, 14% of South Carolina plantations contained plows. Entries from Charles Drayton's diary indicate that in the 1790s, horses and oxen both pulled plows on his Lowcountry plantations, including Drayton Hall ([DH], The Drayton Journals, Plantation Journals, February 18, 1792; February 27, 1792; October 13, 1792; October 1, 1793; January 18, 1798). Of the plows listed on probate inventories from the Lowcountry, however, only two were ever designated as either ox or horse plows. As it were, these were two ox plows dating to the 1770s. Although small in number, the fact that ox plows were the only ones explicitly listed in the probates suggests that oxen may have been a preferred plow animal in the Lowcountry. Provision crops in the Lowcountry, such as peas and corn, could be cultivated with either the plow or the hoe (Drayton 1802:136-137), and tidal rice fields were only occasionally plowed if they were dry enough (Carney 2001:121; Drayton 1802:140-141). With their sturdy legs and cloven hooves, oxen were better-suited to plowing in the Lowcountry's wet, loamy soils than were horses.

Similar to plows, wagons were relatively infrequent in the probate inventories of eighteenth-century Lowcountry plantations (Figure 24). Also similar to the plows, the times when the wagons were attributed to a certain species, these were always noted as "ox wagons." At the turn of the nineteenth century, John Drayton (1802:141) remarked that wagons and sledges were more common in the upper and middle country than in the Lowcountry and tended to be pulled by horses. While wagons may have been more numerous in the upper country of South Carolina and pulled by horses, those few wagons in the Lowcountry may have been pulled by oxen, again because of their ability to navigate the muddier terrain of that region.

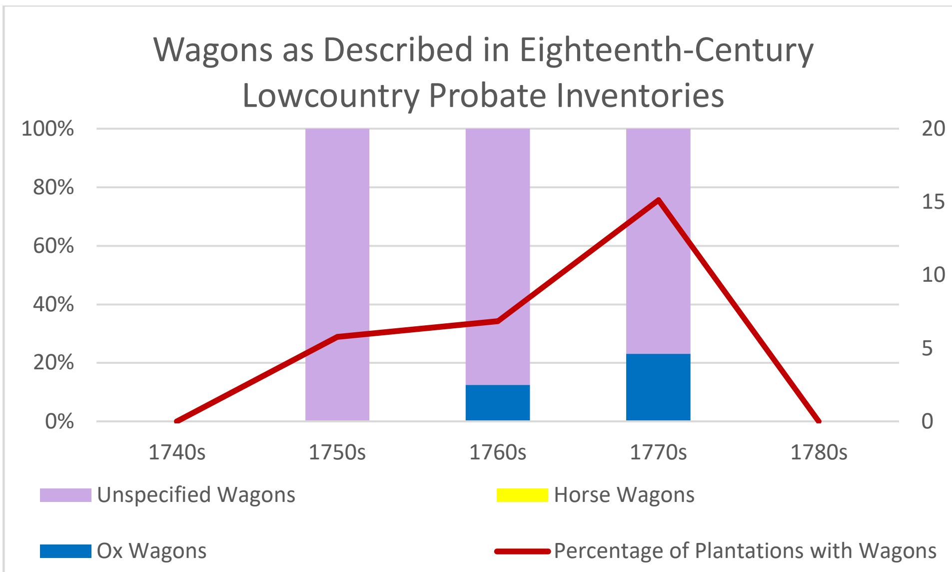


Figure 24. Distribution of wagons on Lowcountry plantations, as evidenced in probate inventories.

In the Lowcountry probates, the most noticeable labor of oxen was pulling carts. In the 1760s and 1770s, roughly half of the inventoried carts were listed as "ox carts" (Figure 25). Prior to this, horse carts slightly outnumbered ox carts in the inventories. Overall, however, the numbers of horse carts and ox carts in the Lowcountry probates were much more even than in the Chesapeake probates, where ox carts were more prevalent. In the first decades of Lowcountry settlement, canoes were the most common form of transportation for both people and agricultural products (Gray 1933:55-56). Throughout the eighteenth century, though, roads improved and land transportation increased. By the end of the century, as John Drayton (1802:141-142) noted, "ox carts, capable of carrying three or four barrels of rice, are, almost, solely the mode of land transportation for the rice planters. These are used, in carting coopers stuff, rails, and timber for plantation use. And, where the settlements are inland, they also cart the rice to a landing." Although oxen and horses were both clearly cart animals throughout the eighteenth-century Lowcountry, oxen may have been slightly more popular in the second half of the century as their steady pace was well-suited for carrying loads of small grains, such as rice.

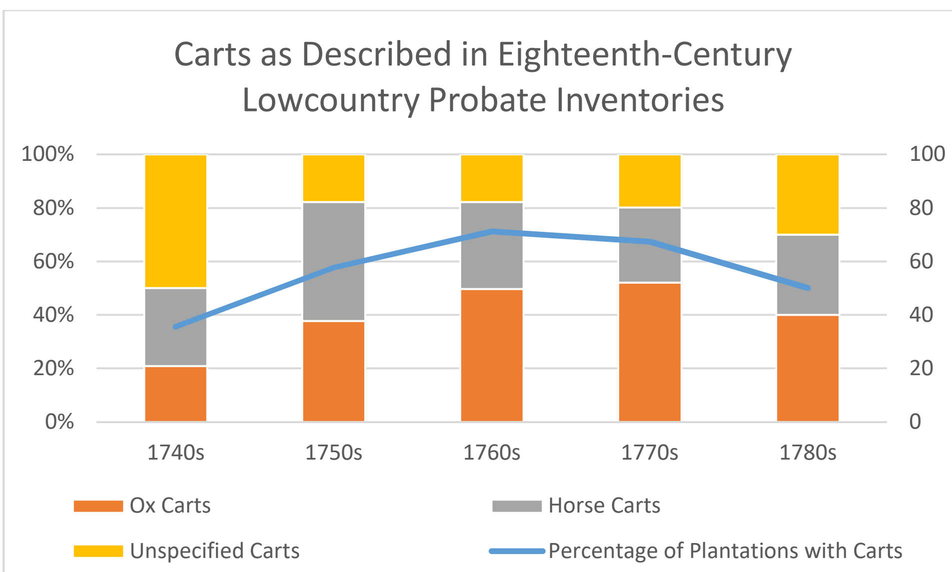


Figure 25. Distribution of carts on Lowcountry plantations, as evidenced in probate inventories.

Although the probate inventories and the faunal assemblages are relatively silent on the specific tasks of lumbering and machine work, additional sources point to oxen performing these labors on Lowcountry plantations as well. In creating new rice fields, the land had to be cleared for planting, requiring draught animals to pull the felled trees out of the fields. Furthermore, the lumbering industry itself was important throughout the eighteenth-century Lowcountry (Edelson 2006:64-77; Gray 1933:55-58). The shorter legs of oxen allowed them to maneuver around the remaining stumps more efficiently than horses could when hauling lumber (Garret 1998:229-230). In July of 1765, John Bartram "saw 5 yoke of oxen hauling plank with 4 wheels" (Bartram and Harper 1942:13), evincing the use of (numerous) oxen in Lowcountry lumbering. Additionally, by the 1750s, horses and oxen powered the pecker mills which removed the outer husk from the grains of rice (Carney 1996:119-120; 2001:128; Morgan 1998:155). Only three inventories mentioned animal-powered rice mills, though, and these three all specified horses as the source of the power.

Noteably, all of the significantly pathological cattle specimens from the Lowcountry sample were recovered from Drayton Hall, whose agricultural role changed during the eighteenth century from a cattle- and rice-producing plantation to a plantation which largely served as the family's center of business (Accessible Archives 2015a, South Carolina Gazette: September 28, 1734; Zierden and Anthony 2008:7-80). Stobo Plantation, a documented rice-producing plantation throughout the eighteenth century, did not return any significantly pathological elements. This suggests that the labors oxen provided on Lowcountry plantations were related to more nuanced characteristics of each individual plantation rather than to rice production as a whole. The pathological specimens from Drayton Hall could represent oxen involved in rice production, as many of the other Drayton family properties in the Lowcountry were rice and indigo plantations, and, in the last decades of the eighteenth century, cattle and oxen were regularly moved between the various properties and Drayton Hall ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820; Epenshade and Roberts 1991:19). However, it is just as likely that the oxen of Drayton Hall labored in plowing, carting, and/or lumbering not related to rice production.

The variable presence of oxen on eighteenth-century Lowcountry plantations and the lack of zooarchaeological evidence for draught oxen at a known rice-producing plantation suggests that there was not a direct correlation between ox labor and the major agricultural product of the eighteenth century, as there was in the Chesapeake. Rather, it appears that oxen's contributions to the physical and social landscapes of Lowcountry plantations were dependent on the individual plantation and the situation at hand. Oxen were certainly well-suited for laboring in agricultural and non-agricultural tasks on the difficult terrain and in the mucky soils of the Lowcountry, but social and cultural factors, such as the desire to maintain slave-powered hoe agriculture, likely played a major role in determining whether or not an individual plantation took advantage of oxen's labor potential. In the concluding section below, this chapter will recount the identification of oxen from the Chesapeake and Lowcountry and the possible reasons behind the differential usage of oxen on eighteenth-century plantations in both regions.

Conclusions

It is nearly impossible to identify working oxen on eighteenth-century Chesapeake and Lowcountry plantations without the incorporation of historical evidence and zooarchaeological methods aimed at answering more than simply "who ate what?" Therefore, this dissertation examined probate records for evidence of oxen and their labors on plantations in both regions. Similarly, this dissertations marks the first use of Bartosiewicz et al.'s (1997) methodology for identifying draught cattle on zooarchaeological materials from British Colonial North America.

The results of applying Bartosiewicz et al.'s (1997) methodology were varied, with different elements showing different trends in the likely presence of oxen throughout the eighteenth century, especially in the Chesapeake. Due to the multivariate nature of the development of lower leg pathologies, it appears that this methodology not only identifies likely draught oxen from the zooarchaeological record but also parses out slight temporal differences in overall cattle husbandry. This certainly clouds the overall identification of draught oxen in zooarchaeological assemblages. However, by combining the zooarchaeological data with historical evidence, one can elucidate which factors are most likely affecting the observed pathology.

Therefore, historical evidence, in the form of probate inventories, was able to more definitively identify oxen and their labors on eighteenth-century plantations than was the zooarchaeological evidence alone. The combined zooarchaeological and historical evidence indicate that draught oxen were present on plantations in both regions, but the tasks they performed and the overall uniformity of their presence differed between the Chesapeake and the Lowcountry.

In the Chesapeake, oxen were present on the majority of Upper Chesapeake plantations in the second half of the eighteenth century, coinciding with the large-scale shift from tobacco to mixed grain production. Grains required more animal power for plowing, cultivation, and transportation than did tobacco. Thus, as more and more Chesapeake plantations focused on mixed grain production, they incorporated oxen into the grain cycle, resulting in a higher proportion of Chesapeake plantations having oxen. During the Upper Chesapeake's early-eighteenth-century phase of plantation diversification, oxen were integral for plowing under old, infertile tobacco fields to create wheat fields which reintroduced nutrients to the soil. However, as the focus on grain production increased and the soil became easier to work, oxen were better able to serve the plantation as cart animals, relinquishing their plow-pulling title to horses. Therefore, there was a direct connection between oxen and agriculture in the eighteenth-century Chesapeake, and this connection was seen across the majority of plantations in the region.

In the Lowcountry, however, oxen were not intimately linked with the production of cash crops; the eighteenth-century rice boom in South Carolina did not rely on extensive plowing. Rather, the labors of oxen were more closely associated with individual plantations than with regional rice production. The lack of osteological evidence of working oxen from Stobo Plantation, a known rice- and indigo-producing plantation, reinforces this point. As they were not deeply integrated into rice production, oxen were found on a lower proportion of Lowcountry plantations when compared to plantations in the Chesapeake. Those Lowcountry plantations that did have oxen, however, kept a large number on hand, averaging more per plantation than in the Chesapeake. These large numbers of oxen on select plantations may have pulled plows in rice or provisions fields, but were more likely to be found hauling carts or lumber. Although not uniformly present throughout the region, when they were present, oxen were a major component of and contributor to the landscape of eighteenth-century Lowcountry plantations.

During their lifetimes, oxen in the Chesapeake and the Lowcountry supplied plantations with a steady, reliable source of labor. The temperament and physical structure of oxen coupled with environmental factors in each region, such as soil conditions, made them more suited than horses for performing certain tasks. Through a combination of zooarchaeological and historical data, one can appreciate the various physical labors which oxen performed and begin to surmise how those oxen and their labors shaped the physical and social landscapes of eighteenth-century Chesapeake and Lowcountry plantations.

Chapter 6. The Working Equines of the Chesapeake and Lowcountry

Horses were one of the last species of livestock to co-evolve with humans through domestication. Around 4,000 BCE on the plains of southern Russia, humans and wild equids entered into a domesticatory relationship founded on sustenance. Soon thereafter, horses began providing valuable transportation to humans in the form of riding and, around 3,000 BCE, draft power (Anthony and Brown 1989; Budiansky 1997:54; Clutton-Brock 1999:100-113; Levine 2005:7; Zeder 2012a:176). Around this same time, people began breeding mules, the sterile hybrid between horses (*Equus caballus*) and asses (*Equus asinus*), in southwest Asia where populations of the two domesticates were first brought together (Bartosiewicz and Gyongyossy 2006:290).

In Anglo-Saxon England, horses were luxury animals, hardly performing strenuous labor such as plowing until the medieval period. During the medieval period, horses increasingly became the plow animal of choice in certain areas, such as in peasant farming communities where work animals did not have to labor as much as they did on the lands retained and managed by manorial lords. In general, horses are more versatile than oxen, and small English farmers preferred horses' more multipurpose nature (Langdon 1982; Langdon 1986). It was not until the turn of the eighteenth century, however, that horses became the favored draught animal throughout England (Brown 1991:2).

Despite the popularity of horses as working animals in England, mules and donkeys remained rare. Mules were uncommon throughout all of northern Europe but were especially scarce in the British Isles. On the rare occasions that they were present in England, mules served as pack or plow animals (Clutton-Brock 1999:49, 155; Ellenberg 2007:8). The scarcity of mules in England likely contributed to the limited use of mules in the British colonies, as shall be discussed in this chapter.

Using the animal landscape approach, this chapter emphasizes the suitability of horses and mules as animal laborers on eighteenth-century Chesapeake and Lowcountry plantations. Historical and zooarchaeological evidence from each region supply the data necessary to identify working equines and the labors they performed. Finally, this chapter presents the analyses of the articulated horse skeletons recovered from Jamestown Island and Yorktown, Virginia, as case studies in the osteobiographies of horses from the eighteenth-century Lower Chesapeake.

Why Horses and Mules?

Horses and mules have been laboring in human societies for almost as long as they have been in human societies. Although horses are generally more expensive to maintain than oxen because of their additional feed requirements (Budiansky 1997:15, 29, 31; Janis 1976:763-764; Langdon 1986:251), their speed, endurance, and overall versatility meant that they were often a favored working animal in the British colonies. Mules, like oxen, usually do not require supplemental feed and are more sure-footed than horses (Fusonie and Fusonie 1998:31; Garrett 1998:227). Yet, these working equines were not a primary working animal in North America until the nineteenth century, as will be discussed in more detail later.

Pearson (1985:53) states, "…the horse, probably because of certain physiological advantages, has probably the greatest capacity for physical work of all domestic animals." Horses store extra red blood cells in their spleen, which can then be released during strenuous exercise. Furthermore, as non-ruminants, horses can store more glycogen in their muscles than ruminants can, which need the glycogen in their gut. Horses' reserved red blood cells and their muscular glycogen mean that they are better equipped than oxen to complete both aerobic and anaerobic work (Pearson 1985:53). This work efficiency is manifested in horses' endurance, speed, and strength. Horses and mules can work an average of eight hours per day, compared to oxen's five- or six-hour work day (Barwell and Ayre 1982:5). Additionally, horses move about one-and-a-half to two times faster than oxen (Bartosiewicz et al. 1997:31; Barwell and Ayre 1982:2; Langdon 1986:160). Because of this stamina and speed, Langdon (1986:163) estimates that one horse can do the same work as would be required of two oxen, thus offsetting the additional feeding costs of horses.

Mules, on the other hand, do not have the same feeding requirements as horses. Hybrid vigor, or "the interbreeding of two genetically different individuals" (Clutton-Brock 1992:43), creates mules that have a larger body size, greater endurance, and better efficiency in digesting poor foodstuffs than either horses or asses (Clutton-Brock 1992:42; Proops et al. 2009:75). Estimates from the eighteenth, nineteenth, and twentieth centuries all indicate that, in similar working conditions, mules require less grain than horses (Lamb 1963:29; Pomeroy 1825). Thomas Jefferson estimated that a mule ate 1.3

gallons of corn per day whereas a horse consumed two gallons of corn per day (Lamb 1963:7). In addition to lauding their lower feed requirements, planters and breeders also praised mules in the nineteenth century for their longer working lives and relative disease resistance (Ellenberg 2007:20-23; Lamb 1963:27-28; Pomeroy 1825).

Pound for pound, horses and mules are also both stronger than oxen, exerting a draught force of about 15% of their total body weight (Barwell and Ayre 1982:3). The draught power of equines comes from their strong shoulders and breasts. Because of the strength of the equine chest, full collar or breast-band harnesses are able to capture draught power from the animal's chest without constricting the windpipe, a fault in using a similar harnessing system on weak-chested oxen. Moreover, equines are strong-backed. Different harnessing systems are able to draw from these different areas of power, meaning that horses and mules can effectively carry heavy loads on their backs or haul difficult loads behind them (Barwell and Ayre 1982:5; Lynn R. Miller 2004:31). Therefore, horses are more versatile than oxen, an important trait on small farms with minimal resources for purchasing and maintaining multiple working animals (Langdon 1982:40).

In the early years of British colonization in North America, any horses which were to supply the settlers with labor had to be imported. Until the mid-seventeenth century, horses were scarce in the Chesapeake, and only the rich could afford to import them from either England or the British colonies in New England. By the late 1660s, however, horses had adjusted to the local environment and a local, sustained breeding population emerged, meaning that more and more planting families were able to afford horses for personal transportation (Anderson 2002:385; Walsh 2010:155-156).

At this time, too, horses became a matter of pride throughout the Chesapeake. Late-seventeenth-century-Virginians, especially, prided themselves on not only their horses but also their horsemanship (WGS 1895). Virginians depended on horses for status as well as service. In his 1724 work, *The Present State of Virginia*, Hugh Jones remarked, "[Virginians] are such lovers of Riding, that almost every ordinary Person keeps a Horse; and I have known some spend the morning in ranging several miles in the Woods to find and catch their Horses only to ride two or three miles to Church, to the Court House, or to a Horse-Race" (quoted in WGS 1895:298-299).

Unlike early colonists in the Chesapeake, the early colonists of South Carolina did have access to a local horse population. Semi-feral horse herds populated the southeastern colonies, being the progeny of Spanish horses left in the West Indies in the 1580s (Chard 1940). The Carolina Marsh Tacky developed from these Spanish horses (Conant et al. 2012). Marsh Tackies lived in a semi-feral state for hundreds of years, but were often captured, tamed, and used as mounts, such as by Francis Marion during the American Revolution (Lynghaug 2009:47).

Despite the presence of semi-feral horses throughout Carolina during the colonial period, many British colonists preferred "blooded" horses imported from the Northern colonies and England. During the first decade of settlement in South Carolina, a large number of horses, known as Narragansett pacers, were imported from New York and Rhode Island. These horses were "not so good as those in England, but by reason of their scarcity much dearer" (Gray 1933:55). By the mid-eighteenth century, however, the locally-bred Chickasaw or Choctaw was the most popular horse in the colony. Their popularity was short-lived, though, as horses of English descent rose in prestige and numbers from the late-1750s through the 1780s (Chard 1940:99; Dunbar 1961:127). Probate inventories from this time period in and around Charleston routinely list horses "of the English breed." (e.g., Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume CC: 267-273).

Compared to horses, the introduction of mules to the Chesapeake and Lowcountry was sporadic and irregular. George Washington is credited with being "The Father of the American Mule." Yet, he was nearly two centuries behind the Spanish who brought mules to the American Southwest and two decades behind the New England farmers who bred their less valuable mares to jackasses, exporting the resultant mules to the West Indies (Chard 1940:94; Lamb 1963; Moorhead 1957; Pomeroy 1825). Before Washington had even embarked on his mule-breeding program at Mount Vernon, mules were working along the York River in Virginia because, as Johann Schoepf stated in 1783, they were "so perfectly adapted for the American economy, thriving with scant attention and bad feed" (quoted in Gray 1933:202-203). Similarly, mules were included in South Carolina's 1784 acts against misbrandings (Gray 1933:202-203). Once Washington's mule-breeding program was established in the mid-1780s, he actively promoted mules in southern agriculture. Although they never achieved the popularity of horses and oxen during the eighteenth century, mules did have a marked presence in agriculture in the nineteenth century, making up a full one-quarter of all southern draft animals in 1860 (Ellenberg 2007:13; Lamb 1963:31; Savory 1970).

Given horses' and mules' capacity for work and horses' prominent placement in Chesapeake and Lowcountry society, one would expect to find ample evidence of horses and their labors in the archaeological record. However, equines remains are uncommon in the excavated deposits from eighteenth-century plantations. The next section addresses this scarcity and the possible reasons behind it.

Knackered Nags and Mislaid Mounts

Unlike cattle remains, equine remains are shockingly rare in the archaeological records of domestic sites. This can be attributed to the fact that most excavated deposits include kitchen refuse, and animals seldom end up in kitchen refuse unless they are consumed (Bartosiewicz 1995: 55). In the Anglo-American world, horses rarely made their way to the dinner table unless it was a period of starvation or other necessity (e.g., Bowen and Andrews 2000; Simoons 1994). Taboos against eating horseflesh can be seen as far back as the Old Testament, which counted horses as "unclean," and, thus, unfit for human consumption (Poole 2013:32). Early Christians likely adopted the Roman taboo of the time against eating horseflesh and used it as a means to distinguish Christians from non-Christians (Poole 2013:321). As Christianity spread in England in the sixth through the eighth century, the occasional consumption of horseflesh decreased even more, especially amongst the elites who were early adopters of the Christian faith and its corollary food taboos (Poole 2013). British colonists brought this aversion to consuming horse meat with them to the New World.

Despite the Anglo taboo against horse consumption, horses can be found in the archaeological record, albeit in very small numbers. Twelve eighteenth-century middling farm sites in Delaware returned horse remains with evidence of butchery on them, leading the authors to conclude that horseflesh was consumed at the sites (Bedell 2000:242). In Charleston, South Carolina, horses have a scant presence in the early historical record and are completely absent from the early archaeological record. As the eighteenth century progressed, however, and into the nineteenth century, the number of horse remains recovered from Charleston's archaeological deposits increases. Most of these equid remains are isolated teeth, which can reveal limited information on the animals' working lives and husbandry within the confines of the city. Zierden and Reitz (2009:358) suggest that horses and mules may have been disposed of in knackers' yards or similar locations which have not yet received archaeological attention.

Therefore, it is not only consumption practices, or lack thereof, but also disposal practices which lead to the dearth of archaeological horse remains at British colonial sites in North America. At Witney Palace and Dudley Castle, both in England, butchery patterns and elemental distributions suggest that these sites were exclusively knackering sites during the eighteenth century which butchered horses to feed packs of hunting hounds. The horses butchered for dog meat were likely old work horses who were too old or infirm to continue their toils (Thomas and Locock 2000; Wilson and Edwards 1993). Similarly, in Victorian London, old carriage and work horses were slaughtered and butchered to provide pet food, bone tools, fertilizer, leather, furniture stuffing, and adhesives (Wilson and Edwards 1993:52).

On eighteenth-century plantations in North America, planters may have sent horse remains off for knackering or rendering into similar products as they did in England. Or, perhaps, if a horse died on a plantation, the planter had the remains discarded in the peripheral areas of the estate, so as to not bring stench, disease, and scavengers to the activity areas of the plantation. The faunal assemblages from the four plantation sites used in this dissertation suggest that such disposal methods were practiced more commonly on eighteenth-century Upper Chesapeake plantations than they were on contemporary plantations in the Lowcountry.

No equine remains were identified in the assemblages from the Upper Chesapeake plantation sites (Bowen et al. 2016; O'Steen 1986), while a small number were identified from the Lowcountry sites (Carlson 2014a; Carlson Dietmeier 2015a; Webber and Reitz 1999). Probates from each region, however, indicate that throughout the eighteenth century, horses were present on plantations in numbers averaging about one-third of the total number of cattle (Table 5). One would expect the archaeological remains to reflect this documented horse to cattle ratio.

Table 5. Average Horse : Cattle Ratios in Plantation Probate Inventories

Period	Chesapeake	Lowcountry
2nd Quarter of 18th Century	0.242	0.297
3rd Quarter of 18th Century	0.276	0.383
4th Quarter of 18th Century	0.355	0.292

Breitburg (1991) has shown that, when compared with the data present in historical documents, the minimum number of individuals (MNI) is a more accurate measure of relative past animal populations than is the number of identified specimens

(NISP). This also appears to be the case when looking specifically at equine remains from the four plantation sites. The average eighteenth-century horse to cattle MNI ratio from the Lowcountry plantations, at 0.286, comes remarkably close to the approximate one-third ratio expected from the probate records (Table 6). When using NISP, however, horses are present at less than one-tenth the proportion that one expects (Table 7), underlining the overall scarcity of equine remains in plantation assemblages. Therefore, while MNIs do indicate an accurate relative horse population on eighteenth-century Lowcountry plantations, the raw count, or NISP, of archaeological equine remains is still staggeringly low.

Given the evidence in the probate inventories and the accurate MNI ratio of horses to cattle in the Lowcountry, the complete lack of equine remains from Chesapeake plantation sites is alarming. The huge discrepancy between the expected and actual ratios of horses to cattle on Chesapeake plantations may be related to differences in the disposal of equine remains in the Lowcountry versus the Chesapeake and/or to the sampling strategies employed at each of the sites.

In the Chesapeake, horse remains may have been more prone to knackering or rendering than their Lowcountry counterparts, being carted off to processing sites and leaving fewer identifiable pieces. It also may be that, in the Chesapeake, horses were buried or disposed of further away from activity areas than in the Lowcountry. When Lowcountry planters wished to fill in wells or conduct cleaning episodes of their properties, they may have, either accidentally or intentionally, drawn refuse from the areas near where the horses were buried, picking up random elements and depositing them in the locations to be excavated two hundred years later.

Table 6. Horse : Cattle MNI Ratios from Plantation Faunal Assemblages

Period	Assemblage	Chesapeake	Lowcountry
2nd Quarter of 18th Century	South Grove Midden Phase I	0.000	
	Upper Well – Section B	0.000	
	Lower Well – Section D	0.000	
	Stobo Plantation, 1720-1740		0.500
	Pre-Drayton Assemblage		0.200
3rd Quarter of 18th Century	House for Families, 1759-1769	0.000	
	House for Families, 1769-1779	0.000	
	South Grove Midden Phase II	0.000	
	Oxon Hill Feature 5000	0.000	
	Stobo Plantation, 1741-1770		0.000
	South Flanker Well		0.400
4th Quarter of 18th Century	House for Families, 1779-1790s	0.000	
	South Grove Midden Phase III	0.000	
	Stobo Plantation, Demolition		0.333

Table 7. Horse : Cattle NISP Ratios from Plantation Faunal Assemblages

Period	Assemblage	Chesapeake	Lowcountry
2nd Quarter of 18th Century	South Grove Midden Phase I	0.000	
	Upper Well – Section B	0.000	
	Lower Well – Section D	0.000	
	Stobo Plantation, 1720-1740		0.029
	Pre-Drayton Assemblage		0.012
3rd Quarter of 18th Century	House for Families, 1759-1769	0.000	
	House for Families, 1769-1779	0.000	
	South Grove Midden Phase II	0.000	
	Oxon Hill Feature 5000	0.000	
	Stobo Plantation, 1741-1770		0.000
	South Flanker Well		0.029
4th Quarter of 18th Century	House for Families, 1779-1790s	0.000	
	South Grove Midden Phase III	0.000	
	Stobo Plantation, Demolition		0.012

The lack of horse remains from Oxon Hill Manor, however, is most likely a result of sampling strategies. In her report on the faunal remains from the site, O'Steen (1986:55) states, "Due to temporal considerations, the faunal samples were selected prior to determination of depositional sections." As a result, only the faunal remains from

Levels 36-45 and Levels 59-76 of the well were subject to zooarchaeological identification and analysis. The Addison Well at Oxon Hill Manor returned a huge sample of faunal remains, and, while going through all of the excavated faunal remains to pull the cattle lower limb elements for analysis, the author located a complete equine metatarsal from level 25. Therefore, equine remains were present in the well at Oxon Hill Manor, but were unable to be included in O'Steen's (1986) analysis or MNI quantifications because they simply happened to be in the wrong level at the wrong time. A thorough identification and analysis of all of the faunal remains from the Addison Well may return additional equine specimens. However, given the complete lack of equines in O'Steen's (1986) sampled levels, it is unlikely that equines would be represented in the one-third horse to cattle ratio which is indicated in the probate records.

Given the rarity of equine remains from British colonial plantation sites and the multifaceted reasons behind this rarity, additional sources of information on equines and their labors are necessary. Historical documents, especially, are crucial in identifying the footprint—or, more accurately, the hoofprint—these animals left on the plantation landscape. This rarity also showcases the importance of including the articulated horse skeletons from Jamestown and Yorktown as case studies in the zooarchaeological analysis of equine remains.

Working Equines on Eighteenth-Century Chesapeake Plantations

The eighteenth-century shift from tobacco to mixed grain production in the Chesapeake affected all of the working animals in the region (Carr and Walsh 1988:148; Gray 1933; Walsh 2010). Unfortunately, the zooarchaeological record from the Chesapeake can do little to inform our understanding of how that shift specifically affected horses and mules. Historical documents, however, elucidate the presence of equines on eighteenth-century Upper Chesapeake plantations and how those working equines contributed to the plantation landscape.

Identifying Working Equines in the Chesapeake

The only zooarchaeological equine remain assessed from the Upper Chesapeake plantation assemblages was the horse metatarsal from Oxon Hill Manor. As stated above, O'Steen (1986) did not include this specimen in the overall faunal analysis of the site because its context was not included in the analyzed sample of the Addison Well. However, it was examined by the author for any signs of labor-related remodeling. The only remodeling observed on the element was moderate lipping on the proximal end. This minimal remodeling coupled with the fact that it was the only equine element from any of the Upper Chesapeake plantation sites does not lend itself to a greater understanding of working equines in the eighteenth century.

This dissertation's analysis of probate inventories, however, does reveal the pervasive presence of equines on eighteenth-century Upper Chesapeake plantations. Horses were present on nearly all Chesapeake plantations during the eighteenth century (Figure 26). The slight dip in the presence of horses in the 1770s corresponds with a contemporaneous dip in the presence of oxen on Chesapeake plantations. These declines suggest that some of the individuals whose inventories were taken during this time did not keep working animals on their plantations and still may have been involved primarily in hoe-based tobacco production. For those plantations which did have horses, the average number of horses per plantation was remarkably steady, only wavering between an average of eight and 14 horses per plantation from the 1740s through the 1780s.

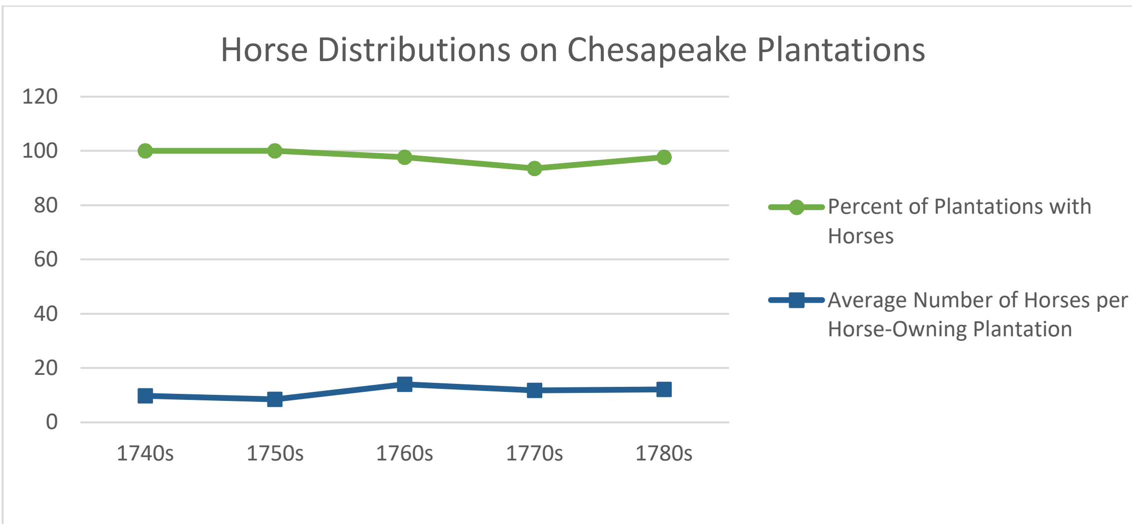


Figure 26. Horse distributions on Chesapeake plantations, according to evidence in probate inventories.

A total of four mules were listed in the probate inventories of three Chesapeake planters: John Hepburn's 1775 inventory, John Carlyle's 1780 inventory, and Richard Brooke's 1785 inventory. Each of these planters also owned horses, suggesting that mules were supplemental to the equine workforce of the plantation. Interestingly, the only Chesapeake planter to own more than one mule was Richard Brooke, who was also the only mule owner to not own any oxen. Perhaps Brooke had replaced his working oxen with faster, yet just as fuel efficient, mules.

These mules and horses constitute a major component of the animal workforce of eighteenth-century Chesapeake plantations. In a 1792 letter to Arthur Young, George Washington commented that in Virginia, horses were more common than oxen as work animals ([PGWDE] 1792). Examining the probate inventories further clarifies how these animals worked on the plantation.

The Labors of Equines on Chesapeake Plantations

The vast majority of the horses in the Upper Chesapeake probate records were not listed with the specific labors or services they provided. Inventory takers may not have specified the labors of these horses because they were breeding stock, they were multipurpose animals which fulfilled multiple roles on the plantation, or simply because the inventory taker did not have time or did not care to record non-essential details regarding each and every horse. At times, however, the probates specifically list riding horses, chair horses, cart horses, coach horses, wagon horses, plow horses, draft horses, or work horses (Figure 27). While riding horses were enumerated in the probates throughout the eighteenth century, most of the horses with labors listed in the probates were involved in traction activities, pulling either agricultural equipment or personal vehicles.

Carts and wagons were the chief implements used to transport agricultural goods and other products within, across, and through the plantation landscape. Although horses were likely not the chief puller of carts on late-eighteenth-century Upper Chesapeake plantations (as detailed in the previous chapter), they do appear to have been the primary wagon animal in the region. Specific wagon horses do not appear in the probate inventories until the 1780s, but horse wagons are seen as early as the 1750s. In fact, horse wagons are over three times more prevalent than ox wagons in the eighteenth-century Upper Chesapeake probates. As four-wheeled heavy freight vehicles, wagons required a draught animal with strength more than stability (Berkebile 1978). Heavy draft horses could supply this strength in addition to speed.

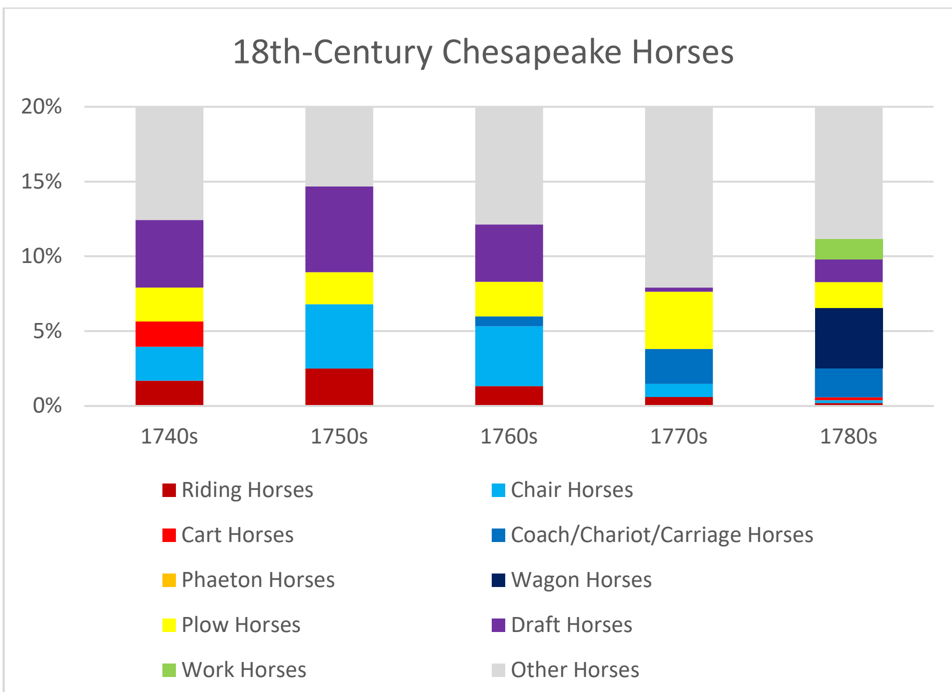


Figure 27. The distribution of laboring horses on eighteenth-century Chesapeake plantations, as indicated in the probate inventories.

Horses were also integral to the increased plowing occurring on eighteenth-century Upper Chesapeake plantations. As stated in the previous chapter on oxen, horses overtook their cloven-hoofed brethren as the chief plow animals in the second half of the eighteenth century. With their fields having been worked by oxen earlier in the eighteenth century, planters could now fully appreciate the speed which horses brought to plowing (Langdon 1986:100, 255). In thirteenth-century England, Walter of Henley suggested plowing with a horse in front of a pair of oxen to speed up the work (Fussell 1966:181). At Oxon Hill Manor, this exact system was practiced, as Thomas Addison's 1775 inventory included "a horse going before the oxen" (Garrow and Wheaton 1986: Appendix 3). At Mount Vernon, however, horses and mules were the prime plow pullers and the oxen were merely the assistants ([PGWDE] 1794). In 1786, for example, George Washington wrote to British agricultural author Arthur Young, asking for two of the simplest and best constructed plows. He specifically requested that these plows be able to be drawn by two horses ([PGWDE] 1786c).

Other historical documents from the region substantiate the claim of a horse-dominated plow culture in the eighteenth-century Chesapeake. Not only do the probate inventories show a decrease in ox plows at the time that horse plows show an increase, but advertisements in the *Virginia Gazette* also reference horse plows 20 times more often than ox plows (Figure 28). Based out of Williamsburg, Virginia, the *Virginia Gazette* was widely distributed in the Lower Chesapeake but also had an Upper Chesapeake readership. References to plows in the *Virginia Gazette* begin in the 1760s, the time when Lower Chesapeake planters were placing more efforts into wheat production and many Upper Chesapeake planters were focusing on wheat production over tobacco production. Throughout the Chesapeake, the mid-eighteenth century was a time when planters required more plows and more plow animals than they had at any prior point in time.

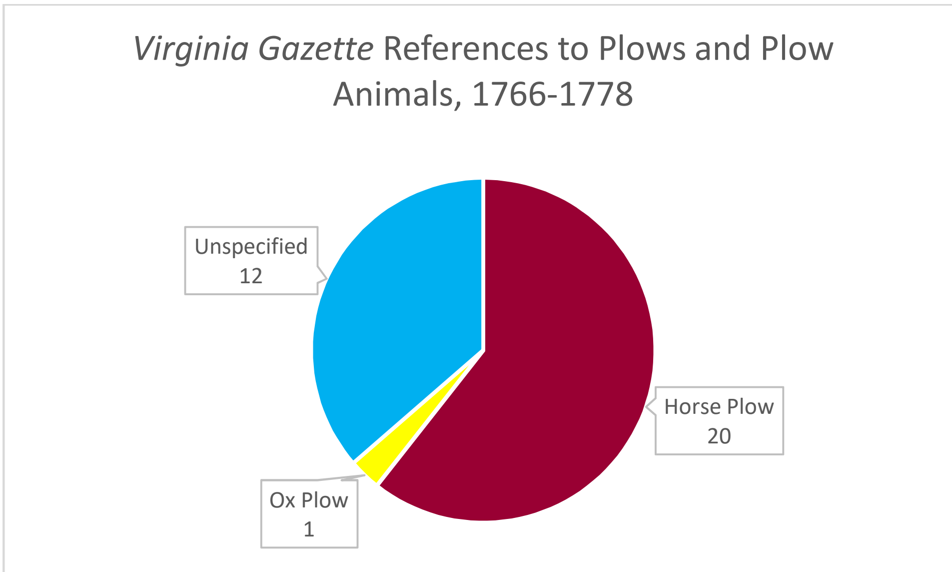


Figure 28. References to plows and plow animals in the *Virginia Gazette* from 1766 to 1778, the years in which the *Gazette* directly referenced plowing or plow animals in Virginia.

The "draft" and "work" horses listed in the probates also probably pulled various farm implements. These animals may have been multipurpose draft animals, pulling carts one day and plows the next. Aside from plow and chair horses, draft horses were one of the most common equine fixtures in eighteenth-century Upper Chesapeake plantation probates. Thus, planters and inventory takers were acutely aware of the importance of equines in agricultural production.

Apart from their agricultural roles, horses on eighteenth-century Chesapeake plantations were integral in their ability to transport people. Riding horses were never a majority of the horses in Upper Chesapeake plantation probates, but they were always present. Forming a much more noticeable portion of the equine workforce were chair horses. Riding chairs were one-horse, two-wheeled vehicles which carried a single occupant (Evans 1997:227; Berkebile 1978:80). Thus, both riding horses and chair horses were responsible for transporting individuals within and the across the plantations of the Chesapeake. On the other hand, coach, chariot, and carriage horses pulled four-wheeled vehicles which held multiple passengers (Berkebile 1978). Coach horses became more numerous in the Chesapeake probates in the latter half of the eighteenth century as chair horses decreased, suggesting a shift in preference from individualized transportation to group transportation. The social implications of shifts such as these are the focus of the eighth chapter of this dissertation.

No labors were enumerated for the mules included in the Upper Chesapeake probates. However, given their inability to reproduce, mules would have been working equines of some kind on those few Chesapeake plantations. At Mount Vernon, Washington's mules pulled carts, carriages, and plows ([MVDA], Farm Combine Document, Farm Reports, 1797, 1798; [PGWDE] 1793b), evidencing the suitability of mules for a variety of traction tasks.

The labors of horses and mules in the Chesapeake were closely integrated into the agricultural systems of eighteenth-century plantations, with plowing and pulling of other agricultural implements some of the most common labors they performed. The different agricultural and social systems of the Lowcountry meant that horses on plantations in that region performed slightly different labors than their counterparts further north in the Chesapeake.

Working Equines on Eighteenth-Century Lowcountry Plantations

Although they were by no means numerous, equine remains were present in the faunal assemblages of eighteenth-century Lowcountry plantations. Additionally, evidence from Lowcountry probate inventories tells of the prevalence of horses on plantations and the work these horses contributed to the plantation. Working animals, including equines, were not as integrated into the agricultural systems of the Lowcountry as they were in the Chesapeake, providing an interesting contrast in the ways equines contributed to the animal landscapes of each region.

Identifying Working Equines in the Lowcountry

Horse remains were identified from both of the Lowcountry plantation sites used in this dissertation. At Stobo Plantation, a single equine remain each was recovered from the second quarter deposits associated with the first house or houses (1720-1740), the areas associated with the fourth quarter demolition and brick-robbing of the main house (Demolition), and the general eighteenth-century deposits in the outside yard area (Outside) (Webber and Reitz 1999). The incisor from the fourth quarter demolition deposit was well worn, indicating an advanced age of the individual. The other equine remains were free from pathologies or other indicators of the life histories or working histories of the equines at Stobo Plantation.

At Drayton Hall, equine remains were identified from deposits dating to the second and third quarters of the eighteenth century. The equine remains from the earlier deposits included a nearly complete radius which was able to be positively identified as coming from a domestic horse (*Equus caballus*) rather than simply an equine (*Equus* sp.). Other equine remains from this deposit included portions of a radius from a second, larger individual; teeth; and phalanges, none of which exhibited severe pathologies (Carlson Dietmeier 2015a).

One horse vertebra from Drayton Hall's third quarter deposit exhibited pathological remodeling on the right caudal rib facet of the centrum (Figure 29). Although no specific trauma or disease can be attributed to this vertebral deformation, pathologies of the vertebrae of horses are more often associated with riding than they are with draught activities (Bartosiewicz and Gál 2014; Daugnora and Thomas 2002:73; Janeczek et al. 2010:332; Mayer-Kuester 2006:247; Upex and Dobney 2012:201). The other equine remains from the third quarter deposit at Drayton Hall included a thirteenth thoracic vertebra (T_{13}) with minimal lipping on the articular surfaces, adult dentition, and juvenile dentition.

Similar to the Chesapeake, the presence of working equines on eighteenth-century Lowcountry plantations is perhaps best elucidated in the historical, rather than the zooarchaeological, record. Probate inventories indicate that horses were present on a majority of eighteenth-century Lowcountry plantations (Figure 30). In general, however, a smaller percentage of Lowcountry plantations were home to horses than were Chesapeake plantations. Lowcountry plantations that did have horses, however, averaged between six and 14 horses, very comparable to plantations in the Chesapeake.

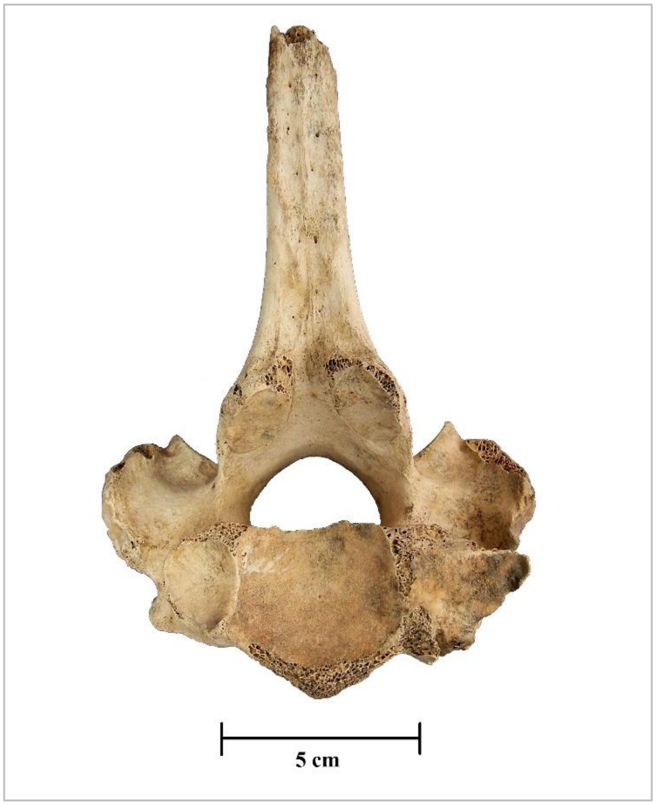


Figure 29. Caudal view of bone 4611, a first thoracic horse vertebra from Drayton Hall's South Flanker Well exhibiting pathological remodeling of the right caudal rib facet. (photo by author, 2014)

No mules were recorded in any of the probate inventories of Lowcountry planters. Similarly, in Ellenberg's (2007:14) study of mules in the American South, he writes, "In late-eighteenth-century low-country South Carolina, more planters kept bees than owned mules; 1.3% of estates listed mules, while 7.6% owned bees." In Richard Beresford's 1772 inventory, however, two jackasses were recorded in addition to his 40 horses (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume Z: 295-300), suggesting that he may have dabbled in or wished to begin mule production at some point. Although

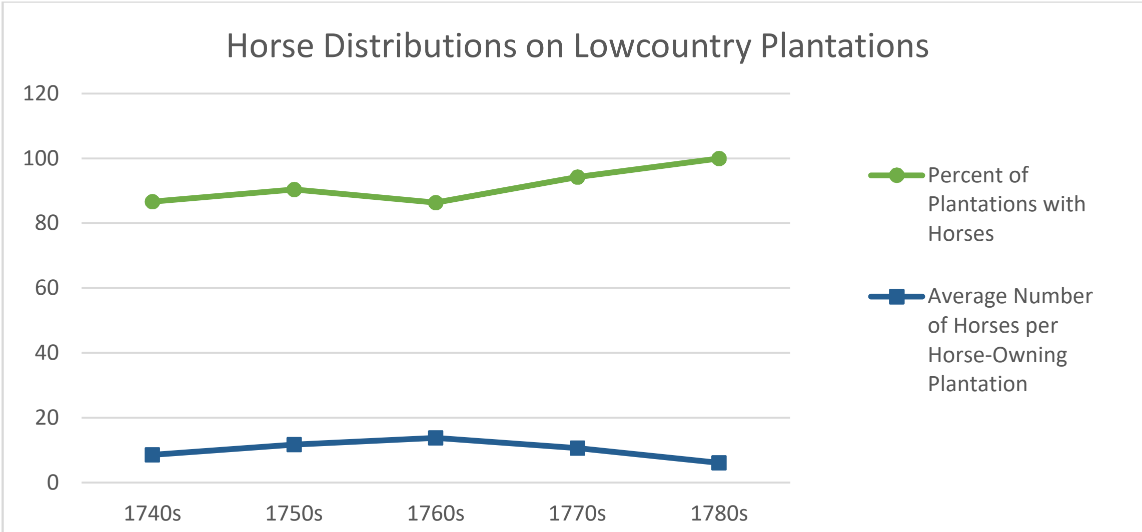


Figure 30. Horse distributions on Lowcountry plantations, as evidenced in probate inventories.

mules are more tolerant of the Lowcountry heat than are horses or oxen (Garrett 1998:227), their narrow hooves were not well-suited for working in the muddy fields. Lamb (1963:26) states that the small feet of mules were considered "particularly inadequate for work in the muddy rice fields of Georgia and South Carolina." It was not until the nineteenth century when mules increased in overall popularity that they were incorporated into Lowcountry agricultural production. Even then, however, the small feet of the mule were a liability, and planters occasionally strapped mule boots to the animals' feet to prevent them from sinking into the wet soils of the rice fields while pulling plows (Figure 31).

Figure 31. A nineteenth-century mule boot used at Windsor Plantation on South Carolina's Black River. (The Charleston Museum; photo by the author, 2013).

The Labors of Equines on Lowcountry Plantations

In addition to fewer Lowcountry plantations having horses than did plantations in the Chesapeake, Lowcountry probate inventories also were less likely to list the specific tasks which horses completed on the plantations. Less than ten percent of all of the horses enumerated in the probate inventories were described as riding, cart, phaeton, plow, work, chair, coach, wagon, or draft horses (Figure 32).

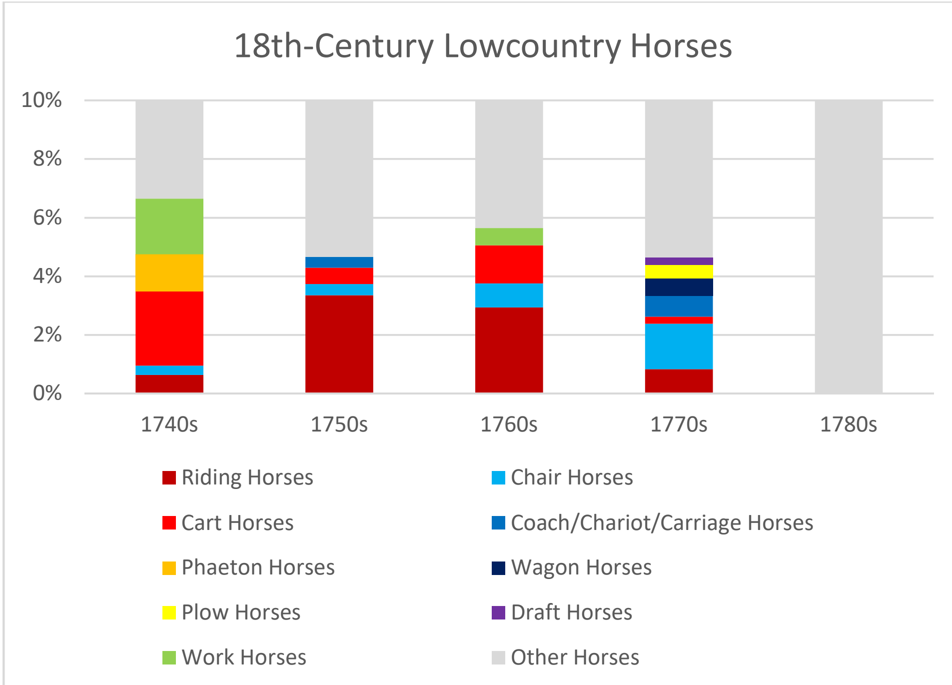


Figure 32. The distribution of laboring horses on eighteenth-century Lowcountry plantations, as indicated in probate inventories.

Of the task-specific equines which were included in the probate inventories, horses that provided personal transportation were the most common. Horses might not have been as well-equipped to navigate the muddy fields of the Lowcountry as oxen were, but their speed and ability to work a six to ten hour day meant that horses could quickly transport passengers long distances (Barwell and Ayre 1982:5; Langdon 1986:160-163). The ability to move swiftly across the landscape was perhaps more important for Lowcountry planters than it was for planters in the Chesapeake. While Chesapeake planters often kept a home plantation with multiple outlying field quarters, many wealthy Lowcountry planters owned multiple plantations and residences throughout the Lowcountry (Weir 1983:153), requiring frequent long-distance travel. In May 1799, John Davis, a tutor to the children of Thomas Drayton, recorded the family's seasonal migration from Ocean Plantation to Drayton Hall, roughly 60 miles away. Members of the Drayton family made the journey in a coach, on a riding chair, or on horseback (Jones 1957:85), underscoring the importance of horses in all forms of personal transportation in the Lowcountry.

The notable presence of riding and chair horses in the Lowcountry probate inventories throughout the eighteenth century further highlights the importance of equines in transporting planters and others around, across, and between Lowcountry landholdings. The slightly pathological equine vertebra from Drayton Hall can only hint at riding activities taking place on an eighteenth-century Lowcountry plantation. On the other hand, the documentary record is clear that horseback riding was a common and important activity on Lowcountry plantations. Similarly, the documentary record indicates the marked presence of chair horses on eighteenth-century Lowcountry plantations, another equine who allowed individuals to swiftly move from one place to another.

Other personal transportation horses in the Lowcountry were tasked with pulling phaetons, coaches, and carriages. These vehicles were capable of holding two or more passengers (Berkebile 1978); thus, their usage indicates group rather than individual mobility. Only in the 1740s were group-mobilizing horses more prevalent than individual-mobilizing horses, as a relatively large percentage of task-described horses were inventoried as phaeton horses during this decade. Coach/carriage horses were also included periodically in the eighteenth-century inventories but in relatively small numbers.

In the probate inventories, the agricultural roles of working horses are minimal relative to their roles in personal transportation. Descriptions of horses as well as descriptions of equipment showcase this trend. Saddles were routinely the most common and riding chairs the second most common horse-related implement on eighteenth-century Lowcountry plantations (Figure 33). These individual forms of transportation greatly outnumbered any vehicles which were capable of carrying multiple passengers, showcasing the importance of individual mobility in the Lowcountry.

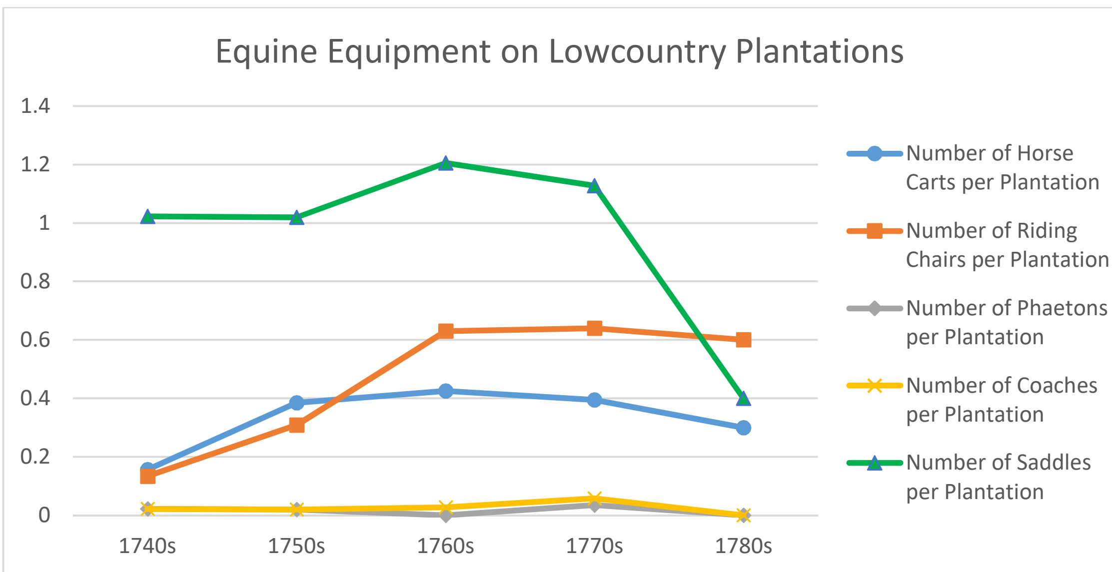


Figure 33. The distribution of equestrian equipment on Lowcountry plantations, as indicated in the probate inventories.

The third most common pieces of equine equipment were horse carts, which were also the only agricultural horse-drawn implements recorded in the Lowcountry probate inventories (Figure 33). Horse plows and horse wagons were never documented, although four plow horses were recorded in a 1779 probate inventory and Charles

Drayton's diary references plow horses five times in the eighteenth century ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820; Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume BB: 190-201). The lack of documented horse plows and the low incidence of plow horses in the eighteenth-century Lowcountry are not surprising. Plows simply were not as essential to the Lowcountry economy as they were in the Chesapeake. Similarly, no horse wagons were recorded in the probate inventories, but the probates from two plantations listed wagon horses. When plows or wagons were utilized in the Lowcountry, oxen were likely called upon to pull these implements as they could more readily navigate the difficult soil and terrain surrounding the fields than could horses.

However, horses did have an impact on Lowcountry agriculture in their ability to pull carts. These agricultural implements are lighter than wagons and, thus, easier for horses to manage on difficult terrain. Cart horses are present throughout the eighteenth-century probates, but after 1740, their presence is largely overshadowed by riding and chair horses. Distributions of the carts themselves indicate that oxen and horses both were integral cart animals (Chapter 5, Figure 25), although, similar to the distribution of cart horses, the percentage of plantations with horse carts declined as the eighteenth century progressed. Despite this drop in popularity, horse carts were vital for transporting staples and provisions. Boats and canoes were the chief means of transporting rice from eighteenth-century Lowcountry plantations to the ports; however, as Morgan (1998:57) writes, "slaves were more likely to transport staples from the plantation to the shipping point by horse-drawn cart or wagon than by any other means."

Throughout the eighteenth century, horses in the Lowcountry also powered machines and toiled as pack animals. Planters utilized horse- and oxen-powered machines to clean rice grains as early as 1710, but these machines were very rare until to the mid- to late-eighteenth century (Carney 1996:117-120; Clifton 1981:273). Secondary sources describe George Veitch's horse-powered mid-eighteenth-century rice machine as capable of polishing approximately 600 pounds of rice in two hours (Clifton 1981:278). In the probate inventories from Lowcountry plantations, however, only three instances of animal-powered rice machines were recorded. In all cases, these machines were run by literal horsepower. Thomas Caw's 1773 inventory includes "8 head of machine horses & mares" (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume Z: 343-350). Similarly, George Austin's 1774 inventory from his Ashepoo plantation includes "7 machine horses & mares" while the notation "Work in the Rice Machine" is directed at 11 of the horses at his Peedee plantation (Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume AA: 42-51).

Pack horses were even scarcer in the Lowcountry probates than were machine horses. This can be expected given that the deerskin trade declined and the bulk of the remaining traders moved their activities inland following the Yamasee Indian War in 1715 (Bartram and Harper 1942:25; Carney 1996:112). No pack horses were recorded in the probate inventories of Lowcountry plantations, but a pack saddle was. Melchor Gardner was specifically listed as a planter, but his inventory includes a single pack saddle (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume X: 195-197). Whether or not Mr. Gardner had been or was still involved in the eighteenth-century fur trade of the southeast (see, for example, Dunaway 1994) is beyond the scope of this dissertation. However, his ownership of a single pack saddle showcases the varied tasks which working equines completed throughout the Lowcountry in the eighteenth century.

With the help of the documentary record, the isolated equine remains from the Lowcountry plantation sites can begin to further our understanding of working horses in that region during the eighteenth century. While these zooarchaeological remains represent a somewhat accurate proportion of the large domesticated animal population on eighteenth-century Lowcountry plantations, their scattered distribution throughout the skeleton does not lend itself well to a systemized study of working equines through zooarchaeological means alone. Luckily, the documentary record provides ample evidence on this front, indicating that horses on eighteenth-century Lowcountry plantations were important in mobilizing people and, to a lesser degree, in mobilizing agricultural products.

With the scattered distribution of equine skeletal remains from the Lowcountry and the lack of equine skeletal remains from the Upper Chesapeake plantations, this dissertation is left largely relying on the documentary record for evidence on the working lives of eighteenth-century equines. Fortunately, the articulated horse skeletons from Jamestown Island and Yorktown, Virginia, provide the opportunity to explore working horses from a primarily zooarchaeological perspective. The following section presents the analyses of these skeletons as case studies in the osteobiographies of working horses in the eighteenth-century Lower Chesapeake.

Case Studies: the Jamestown and Yorktown Horses

An adequate zooarchaeological analysis of the laboring lives of eighteenth-century equines requires more than just a few isolated teeth and fragments of limb bones. Fortunately, archaeologists uncovered two late-eighteenth-century articulated horse skeletons from sites within the Lower Chesapeake. This is especially welcome given that no equine remains were identified from the Upper Chesapeake plantation sites used in this dissertation (Bowen et al. 2016; O'Steen 1986). With complete or nearly complete skeletons, zooarchaeologists can construct an osteobiography, or the life history of that animal based on osteological evidence and contextual information from the time period and region. While the two articulated horse skeletons from Jamestown and Yorktown represent equines with very different life and death histories, these remains represent crucial aspects of the human-equine relationship in the eighteenth-century Chesapeake.

The Jamestown horse was excavated from an east-west ditch located near the seventeenth-century church on Jamestown Island (Figure 34). Based on artifacts found near and beneath the interred equine, the burial post-dates 1760 (Dan Gamble, personal communication 2014). During the late-eighteenth century, two families owned the majority of Jamestown Island and used the land primarily for farming (McCartney 2000a,b,c). The Jamestown horse was recovered from an area of Jamestown Island which likely was part of the Ambler family's landholdings (McCartney 2000b: 436, Figure 105). The horse was a moderately tall (14.1 to 15 hands, or 57 to 60 inches tall at the withers), 20+ year old male which likely lived and worked on the Ambler plantation until it died of natural causes (Carlson 2014b).

Figure 34. The horse skeleton uncovered at Jamestown Island. (Photo courtesy of Jamestown Rediscovery (Preservation Virginia))

In contrast, the Yorktown horse was likely a military animal that died when it was eight to ten years of age. The Yorktown horse was one of three closely-spaced Revolutionary War-era burials excavated close to the waterfront in Yorktown, Virginia (Figure 35) (Laird et al. 2016: 71; Owsley and Camp 2008). The same explosive force likely killed the horse and the two young men buried nearby (Owsley and Camp 2008:1-6). Based on pelvic morphology, the Yorktown horse was likely a gelding. Coupled with the fact that he stood 15 hands (or 60 inches at the withers) tall, the Yorktown horse was likely an impressive mount during the American Revolution (Carlson Dietmeier 2015b).

As a gelding, the Yorktown horse could not be used for breeding purposes, so likely labored in some sense. The Jamestown horse, on the other hand, could only be identified as a male because the pelvis was too fragmentary to distinguish it as either a gelding or a stallion. However, the presence of beveling and the exposure of large amounts of dentine on the lower second premolars indicate that the Jamestown horse was also a working horse or was at least regularly bitted (Bendrey 2007; Brown and Anthony 1998; Olsen 2006:94). Evidence of bitting alone cannot indicate if a horse was used predominately for riding or traction, as both activities regularly use metal bits in the Anglo-American tradition (Bendrey 2007:1049; Brownrigg 2006:170). Patterns and locations of skeletal remodeling, however, suggest that the Jamestown horse may have been a multipurpose animal whereas the Yorktown horse was likely strictly a riding animal.

Figure 35. The horse skeleton uncovered in Yorktown. (Photo courtesy of James River Institute for Archaeology)

At over twenty years of age at the time of death, the Jamestown horse had ample opportunity to toil for years on the Ambler plantation. However, the location and slight nature of skeletal remodeling suggests that the Jamestown horse may have been used for riding and carriage-pulling but was never worked extremely hard. The centra and the transverse processes of the Jamestown horse's fifth and sixth lumbar vertebrae were fused (Figure 36). The transverse processes of the last lumbar vertebrae of horses will sometimes fuse naturally without any outside stressors contributing to the fusion (Bartosiewicz and Gál 2013:138). More severe lumbar fusions, such as that seen in the Jamestown horse, are often associated with riding (Bartosiewicz and Bartosiewicz 2002).

Figure 36. Ventral view of the fifth and sixth lumbar vertebrae (L5 and L6, respectively) and the sacrum, showing the locations of fusion in the joints (Photo by the author, 2014)

On the other hand, the rugose muscle attachment sites, especially those on the hind limbs, suggest that the Jamestown horse was used as a traction animal. These muscle attachment sites were not excessively well-developed, though. Therefore, if the Jamestown horse was a traction animal, it was never worked exceptionally hard, perhaps pulling a light carriage or doing some light plowing.

Additionally, an infection disturbed the left hip of the Jamestown horse, as evidenced by periostitis near the ischiatic spine of the left innominate. Ill-fitting tack can result in sores which may become infected and ultimately lead to periostitis (eg., Janeczek et al. 2010:332). The loin strap of horse harnesses from the eighteenth century and today (Figure 37) typically falls slightly anterior of the hip joint. However, if the harness did not fit properly, the loin strap could lie over the area of the innominate where the periostitis was observed, and, if the harness was too tight, create a sore which could eventually lead to the infection of the underlying bone.

Thus, it appears that the Jamestown horse was used for light riding and light traction during its 20+ year lifetime. The Ambler plantation on Jamestown Island produced wheat and pork in the last half of the eighteenth century (McCartney 2000c:11-13), yet it is unclear from the skeletal remains if the Jamestown horse was involved directly in these agricultural activities. More likely, the horse was used for personal transportation, as the pathologies were relatively minor and suggest both riding and light traction. Interestingly, tax records indicate that the Ambler household owned a wheeled passenger vehicle in 1784 (McCartney 2000c:12-13). Perhaps when it was not under saddle, the Jamestown horse pulled this or a similar passenger vehicle, transporting the Amblers or others around the island and to the mainland.

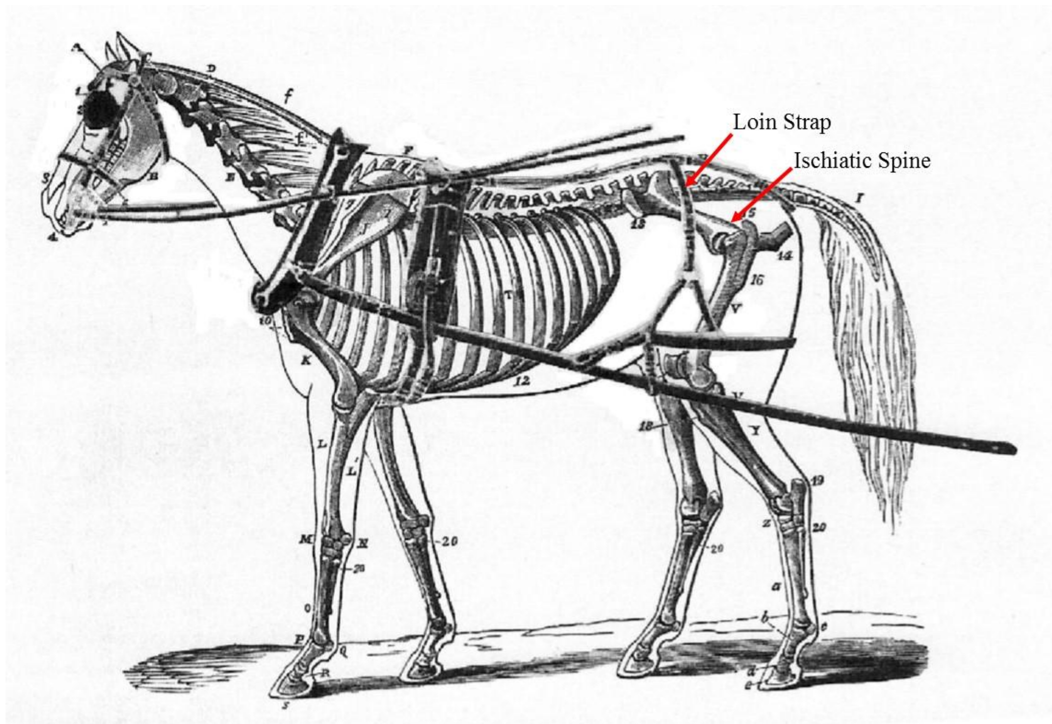


Figure 37. Skeleton of the horse with a basic harness, showing the proximity of the loin strap to the ischiatic spine.

In contrast, the Yorktown horse was more of a "one-trick pony" and was likely used solely for riding. Although the Yorktown horse was only 8 to 10 years old at the time of death, the presence of osteophytes on the vertebrae and limb bones and the delayed fusion of the vertebral epiphyses suggest that it was a riding horse for the majority of its short life. Given its relatively large stature of 15 hands[5], this horse may have been a military mount involved in the campaigns of the Revolutionary War in and around Yorktown.

[5] Ads placed in the *Virginia Gazette* for horses in the year 1775 indicate that the average size of horses at this time was 13 hands, 3 inches, a full five inches shorter at the withers than the Yorktown horse.

There is no definitive evidence of bitwear on the Yorktown horse, but periostitis of the left parietal suggests that the gelding wore a bridle. Similar to the periostitis observed on the Jamestown horse, the periostitis on the Yorktown horse may be the result of ill-fitting tack. The browband of equine bridles fits across the upper forehead in front of the ears, which corresponds to the parietal bones in the cranium. If the browband is ill-fitting or rubs, this could lead to a mild infection of the skin which may spread to the underlying periosteum. Also likely, especially if the Yorktown horse was involved in military campaigns, the periostitis may have been brought about by other trauma such as small cuts or blows (Bartosiewicz and Gál 2013:93).

Changes to the vertebrae of the Yorktown horse are the most convincing evidence that this was predominately a riding horse. Lipping and exostoses were observed from the second cervical through the sixth lumbar (C_2-L_6) vertebra. Such changes in the cervical vertebrae have not been linked with riding activities, but proliferative changes in the thoracic and lumbar vertebrae of horses have been connected with their service as riding animals (Daugnora and Thomas 2002:73; Janeczek et al. 2010:332; Mayer-Kuester 2006:247). Most telling, the second and third lumbar vertebrae each had a bony spur on the ventral side of the centrum extending cranially (Figure 38). Such osteophytes represent the gradual ossification of the ventral longitudinal ligament. Additionally, the spinous processes of the seventeenth and eighteenth thoracic vertebrae had facets which indicated that the spinous processes had articulated with other spinous processes as a result of damage to the interspinous ligaments. Such alterations to the thoracic and lumbar vertebrae were very likely caused by the pressures of carrying a rider coupled with the use of saddles with rigid trees (Mayer-Kuester 2006; Olsen 2006). These added pressures to the spine of the Yorktown horse likely also affected the fusion of the vertebral epiphyses in the thoracic and lumbar regions. Carrying a rider and the effects of castration both likely delayed the fusion of the vertebral epiphyses, which are normally fully fused around five years of age (Silver 1970).

Figure 38. The second lumbar vertebra of the Yorktown horse with an osteophyte on the ventral surface of the centrum (photo by the author, 2015).

In life, the Yorktown and the Jamestown horses likely experienced different things. One was a riding horse; the other performed multiple tasks. One was likely involved in military pursuits while the other likely transported farmers and farm goods. These differences in life have huge implications for how these horses were maintained and the social roles these horses played. In death, however, the Yorktown and Jamestown horses were very similar. Although both were buried, neither received any special treatment in death, and the burials likely represent the need for quick sanitation rather than for emotional reasons.

Because of its presumed military role, the Yorktown horse complicates our study of working horses on Chesapeake plantations. It is unclear whether this gelding was brought over from England as part of the war effort or if it was commandeered into military service from the hundreds of horses living in the colonies at the start of the war. What is clear from the analysis of the Yorktown horse, though, is that horses in the eighteenth-century Chesapeake labored in multiple ways and for multiple purposes and that zooarchaeological analysis can begin to parse out these labors and purposes.

On the other hand, the Jamestown horse represents a key piece in the puzzle of understanding the human-equine relationship on eighteenth-century plantations in the Chesapeake. This individual horse could not be defined as a “chair horse” or a “riding horse,” perhaps illuminating the fact that horses on eighteenth-century plantations often wore multiple hats. This could explain why less than 15% of the horses listed in the Chesapeake probate inventories were ever described with a specific task. Perhaps, more often than not, horses on eighteenth-century Chesapeake plantations completed multiple tasks; only those which were bred and kept specifically for a singular task were ever recorded as such. Given the overall expense associated with keeping horses on eighteenth-century plantations (Home 1776; Langdon 1986), it would be fitting to have horses work in multiple aspects of the plantation when able.

Finally, the Jamestown horse is able to speak to the disposal of deceased equines on eighteenth-century Chesapeake plantations. The faunal assemblages analyzed from Mount Vernon and Oxon Hill Manor lacked equine remains (Bowen et al. 2016; O’Steen

1986), raising the question of where and how deceased equines were disposed. The Jamestown horse was clearly not knackered or rendered, as it was recovered in a remarkably complete condition (Carlson 2014b). Oddly enough, though, the Jamestown horse was not buried in the far reaches of the plantation, which is suspected to be the reason why horse remains are so seldom recovered in the Chesapeake. Rather, the Jamestown horse had been buried relatively close to the Ambler mansion and the handful of townstead lots owned by other families. Few of these lots were inhabited and many likely were eventually subsumed into the Ambler plantation (McCartney 2000b:458-460). It is possible that the Jamestown horse was buried so close to these activity areas because of overall convenience.

In the mid-eighteenth century, a new James City Parish church was built on the mainland, and the seventeenth-century church on Jamestown Island fell into ruins. Although the church was never sold, during the 1790s John Ambler II and William Lee of Green Spring used the bricks of the crumbling church to enclose the graves in the churchyard (McCartney 2000b:460-461). Perhaps the Jamestown horse had been fenced relatively close to the Ambler mansion so he could readily transport the Ambler family around and off of the island and died around this period of time. Rather than hauling the horse's carcass to the edge of the property and far away from the townlots, the Amblers may have simply hauled the carcass to the ditch near the church and then filled in the ditch, thus continuing their "improvements" of the churchyard.

The Jamestown and the Yorktown horses provide an important opportunity to explore working horses in the Chesapeake from more than just the documentary record. As a plantation resident, the Jamestown horse was able to showcase the multiple labors a single horse could have performed in the eighteenth-century Chesapeake. Furthermore, the Jamestown horse represents a time in the Lower Chesapeake when agricultural practices were following similar patterns of diversification which the Upper Chesapeake had experienced earlier in the eighteenth century. Finally, the Jamestown horse suggests that horse remains are rare in Chesapeake plantation assemblages because of burial rather than butchery practices.

Conclusions

The documents and the faunal remains from eighteenth-century Upper Chesapeake plantations indicate a slightly different system of equine labor (and disposal) from that in the Lowcountry. Horses were ubiquitous on eighteenth-century Chesapeake plantations and were integral to the agricultural activities surrounding mixed grain production in the second half of the eighteenth century, namely plowing. Aside from plowing, Chesapeake horses also served the plantation by providing personal transportation as riding animals and as chair horses. Mules, on the other hand, were only present on a very small number of Chesapeake plantations, as they did not become popular draught animals in the Plantation South until the mid-nineteenth century.

In comparison to the Chesapeake, horses were not as pervasive in the Lowcountry, but they were still found on over 80% of all Lowcountry plantations. As animal power was not as firmly interwoven with agricultural production in the

Lowcountry as it was in the Chesapeake, horses occasionally pulled carts and very rarely pulled plows. Rather, Lowcountry planters preferred to use the speed and stamina of horses for personal transportation, as riding and chair horses were the most commonly recorded horses on eighteenth-century plantations in the Lowcountry.

In death, too, the treatment of horses differed slightly between the Chesapeake and Lowcountry. The lack of identified equine remains from the Chesapeake plantations and the completeness of the Jamestown horse skeleton suggest that equines usually were buried far away from areas of high activity rather than knackered or rendered into products. The presence of equine remains in the assemblages from Lowcountry plantations—and in similar MNI proportions of horses to cattle as indicated in probate records—suggests that burial of horses in this region may have been done closer to activity areas, possibly because of the difficulty in moving a horse carcass across the swamplands of the Lowcountry. Regardless, in both regions, the use of historical documents is essential to an understanding of the laboring lives of horses because of their relative rarity in the zooarchaeological record.

Horses on eighteenth-century Lowcountry and Chesapeake plantations were capable of performing any number of labors. However, between the two regions, the general tasks which these horses performed were largely influenced by the agricultural and social practices of the region. These agricultural and social practices will be key in understanding how working horses were raised in each region and how working horses were integrated into the social spheres of plantation residents, as will be discussed in the next two chapters.

Chapter 7. The Husbandry of Working Animals

Zooarchaeological and anthropological literature is riddled with the term "husbandry," yet few authors explicitly define the term. In their analysis of the transition from hunting to husbandry, Alvard and Kuznar (2001) define animal husbandry as a long-term strategy of prey conservation, marking a shift from exploiting the bodies of other organisms to increasing their reproductive potential. Alvard and Kuznar's definition certainly allows one to appreciate the delicate balance between human needs and animal needs in the earliest examples of animal husbandry. However, in fully agricultural societies, it is difficult to think of animal husbandry as merely just "prey conservation" after thousands of years of co-evolution. Perhaps this is why so many zooarchaeologists fail to produce their own definition of animal husbandry, instead relying on the general dictionary definition of the term.

The Oxford English Dictionary (2016) defines husbandry as "the business or occupation of a husbandman or farmer; tillage or cultivation of the soil (including also the rearing of livestock and poultry, and sometimes extended to that of bees, silkworms, etc.); agriculture, farming." Although this definition is broad and fits with most laypeople's understanding of animal husbandry as regarding the care and keeping of animals, a closer inspection reveals the problematic implications of adhering strictly to this definition.

By defining husbandry as "the business or occupation of a husbandman or farmer," the Oxford English Dictionary replicates the notion that humans are the only agentive species in husbandry. Russell (2002:291) defines animal husbandry as “the control of animals’ lives that is present to varying degrees along the continuum of human-animal relations.” Similarly, Hecker (1982:219) defines the term “cultural control” as “that array of human behaviors that has a profound effect on some aspect of the exploited animal population’s natural behavior and dramatically interferes with its movements, breeding schedule, or population structure in such a way as to make the animals more ‘accessible’ to humans.” Both authors clearly fall in line with the dictionary definition and place humans as the only driving force behind animal husbandry.

Furthermore, the dictionary definition of husbandry uses the term “livestock,” or “domestic animals kept on a farm for use or profit” (Oxford English Dictionary 2016), thus emphasizing the gains humans receive out of the relationship rather than the gains that both humans and animals receive out of the relationship. In Clutton-Brock’s (1999:32) work on domestication and domestic animals, she sees these gains in a purely economic sense, writing that a domestic animal is “one that is bred in captivity for purposes of economic profit to a human community…” Once again, this relegates animals to purely protein, calories, and specie and, therefore, does not allow for one to see the social and symbolic importance of domestic animals in everyday life. Keswani’s (1994) ethnographic and archaeological work on early agricultural societies warns of thinking of husbanded animals as being those which have strictly agricultural functions, as the keeping of domestic animals for social reasons is very common in non-state societies.

Therefore, our understanding and definition of animal husbandry must be more inclusive of animals' contributions to husbandry and people's reasons for entering into the relationship of husbandry with animals. Again walking the line between anthropocentrism and anthropomorphism, the animal landscape approach understands animal husbandry as an interrelationship between humans and animals whereby each party's needs and wants are negotiated with the other. In this way, all humans and all animals work with each other to create the landscape in which husbandry takes place.

Husbandry and Working Animals

Working animals have a unique place in the study of animal husbandry. As plantation laborers in their own right, working oxen, horses, and mules had a working relationship and close association with humans from an early age, as training usually began when the animal was relatively young. Later in life, working animals maintained that close daily interaction with humans as they labored alongside their drovers and handlers and were regularly penned closer to areas of activity than were livestock destined for the dinner table. Furthermore, in some regions and time periods, such as the Chesapeake in the second half of the eighteenth century, working animals were essential to plant cultivation through plowing and carting activities, thereby integrating plant and animal husbandry ([DH], The Drayton Journals, Plantation Journals, November 21, 1797; Gray 1933). Plantations—and any other sites on which animal husbandry takes place—

are truly landscapes in which people, animals, plants, natural landforms, and human-made constructions interacted (e.g. Creese 2011; Delle 1998; Norman 2014; Terrell et al. 2003).

In studying the husbandry of working oxen and equines, this research posits that husbandry must be approached as a relationship between humans and domestic animals in which the needs and wants of each party must be taken into account and balanced for the system to thrive. The needs and wants on the human side of the husbandry balance scale are relatively easy to ascertain from the zooarchaeological and historical records. Husbandry strategies are closely related to the age and sex distributions of animals; animals kept for secondary products, such as milk or labor, are likely to live to an older age than those kept for their meat. Also, those animals destined to be laborers tend to be castrated males, as they grow taller and stronger than uncastrated males and remain less temperamental. By combing thorough studies of the natural behaviors and biologies of feral domesticated animals and/or their wild progenitors, one is able to access the needs and wants which fill the animals' pan of the husbandry balance scale. Thus, this chapter will delve into the animal landscapes of eighteenth-century plantations, exploring the interrelations of humans and working animals and how those interrelations shaped the husbandry of working oxen and equines on Chesapeake and Lowcountry plantations.

Husbandry of Working Oxen on Eighteenth-Century Chesapeake and Lowcountry Plantations

To study the husbandry of working oxen, one must ultimately study the husbandry of all cattle. Oxen's placement and classification on eighteenth-century plantations were sometimes fluid and indistinguishable from those of non-working cattle. At Mount Vernon, working oxen often ran with the rest of the cattle. George Washington, one of the most meticulous record-keepers of the eighteenth century and a true visionary in animal husbandry, even failed to distinguish the number of oxen he owned at Mount Vernon, instead writing that he had "a sufficiency of Oxen, broke to the yoke—the precise number I am unable at this moment to ascertain as they are comprehended in the aggregate of the black cattle" ([PGWDE] 1793g). Similarly, although oxen are distinguished as providing a service rather than a product, at the end of their laboring lives, oxen were fattened and slaughtered. In transitioning from an animal which provided a service to one which provided meat, these elderly oxen often received the same treatment as all of the other cattle being fattened for slaughter. Therefore, this section makes all necessary attempts to focus specifically on the husbandry of working oxen. However, to access this specific information, one must explore the husbandry of all cattle on eighteenth-century plantations in the Chesapeake and Lowcountry.

Cattle Herds in the Chesapeake and Lowcountry

Zooarchaeologically, one of the best ways to understand livestock husbandry is through the analysis of age and sex profiles. The ages at which animals are slaughtered are related to the goals of herd production (Payne 1973), and, as Arbuckle (2014:215) notes, the use of both age and sex data can perhaps best indicate a focus on secondary products, such as labor, at a site.

Unfortunately, as noted in a previous chapter, epiphyseal fusion on isolated elements reveals very broad age ranges. Some elements fuse at an early age (less than 18 months). Therefore, if these elements are recovered unfused, juveniles are present in the assemblage. Similarly, some elements fuse at a late age (over 48 months); fused elements from this category, therefore, indicate the presence of adults. However, the fusion data from the eighteenth-century Chesapeake indicates that a majority of the individuals fall into the murky subadult category. In this category, it is only possible to say that the epiphyses of early fusing bones have already fused but the epiphyses of late fusing bones have yet to fuse, making it difficult to accurately pinpoint the demographics of the cattle population (Figures 39-41).

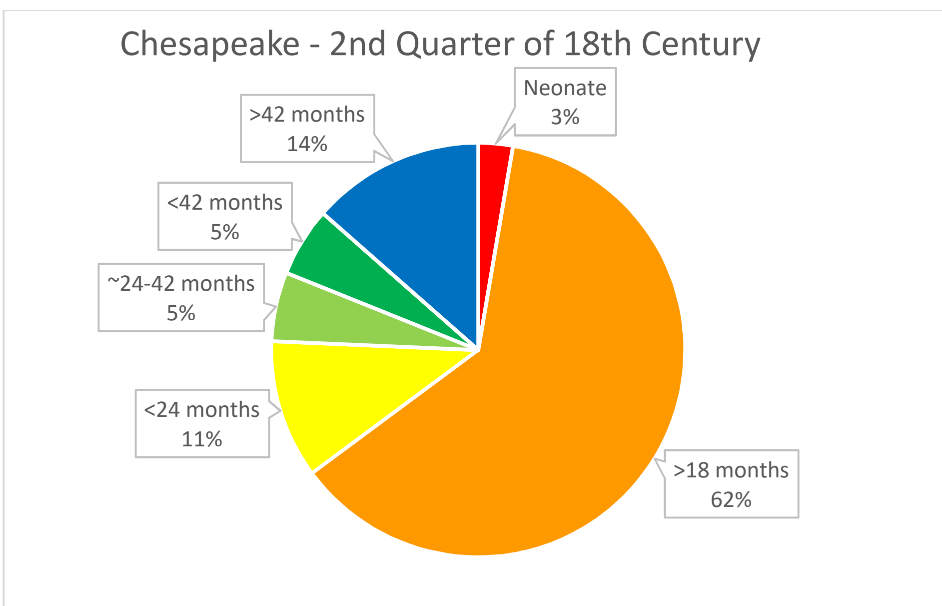


Figure 39. Relative ages at death as indicated by epiphyseal fusion on Chesapeake specimens from the second quarter of the eighteenth century (N=37).

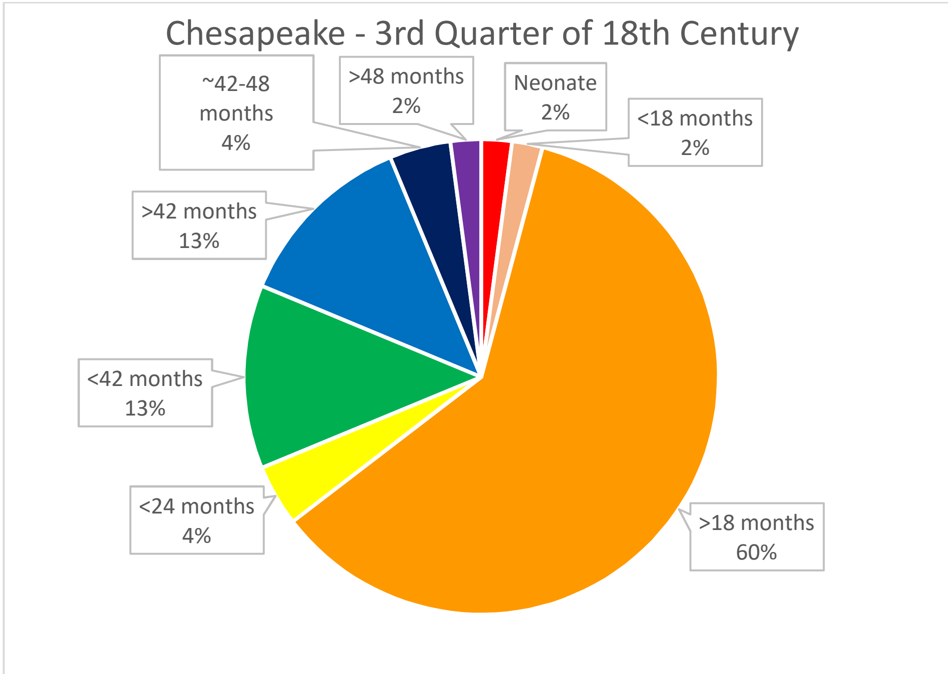


Figure 40. Relative ages at death as indicated by epiphyseal fusion on Chesapeake specimens from the third quarter of the eighteenth century (N=48).

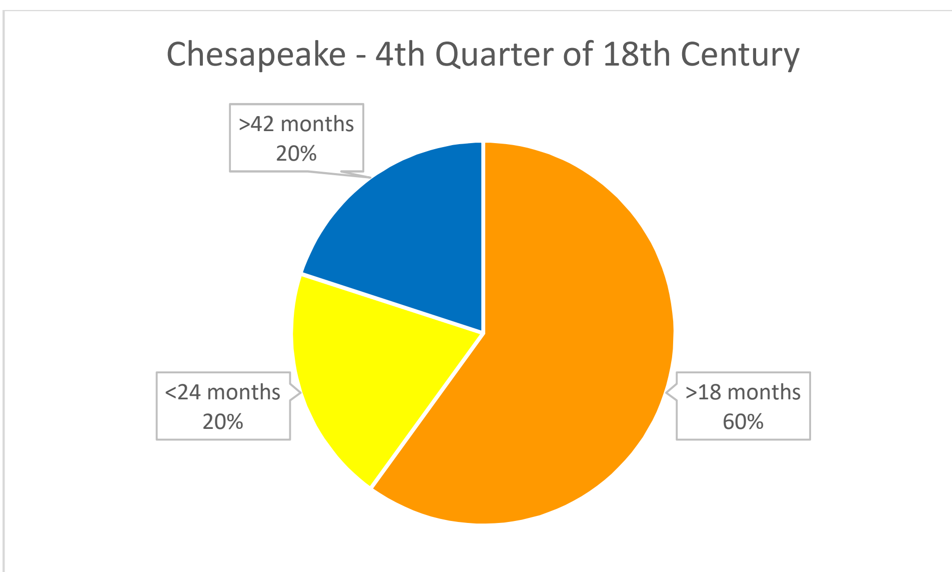


Figure 41. Relative ages at death as indicated by epiphyseal fusion on Chesapeake specimens from the fourth quarter of the eighteenth century (N=10).

Despite this ambiguity, the Upper Chesapeake assemblages assessed in this dissertation reveal changes in the relative age distributions of cattle during the eighteenth century. Notably, in the third quarter of the eighteenth century (Figure 40), adults at or older than 42 months are indicated by a slightly larger proportion of specimens than in the previous quarter. No adults over 48 months were present in the second quarter of the eighteenth century, and no late fusing bones were recovered from the fourth quarter, making it impossible to infer the proportion of adult cattle in the late-eighteenth-century Chesapeake. The second quarter of the eighteenth century also had a larger proportion of specimens representing individuals under 24 months than was seen in the third quarter (Figure 39). Therefore it appears, from the epiphyseal fusion data, that cattle in the second quarter of the eighteenth century were slaughtered at a younger age than they were in the third quarter of the eighteenth century. Miller (1984) concludes that the keeping of more cattle to an age older than 48 months at the turn of the eighteenth century is linked with the increasing use of secondary products compared to the seventeenth century. The data presented here showcase a similar pattern, with the increased presence of older cattle perhaps related to the increased need for oxen to plow and pull carts during grain production in the second half of the eighteenth century.

This may seem a contradiction of what was concluded in Chapter 5, where the severity of pathologies suggested the keeping of cattle to an older age earlier in the eighteenth century. This is simply a matter of sampling. The vast majority of bones from the Chesapeake came from Oxon Hill Manor. These bones, and the probate inventories from Oxon Hill Manor, do indicate the keeping of cattle to an older age earlier in the eighteenth century. However, O'Steen (1986) did not include any age data in her report of the faunal remains from Oxon Hill Manor so the Oxon Hill Manor bones could not be included in the age profiles from the eighteenth-century Chesapeake. Therefore, Mount Vernon supplied all of the cattle bones which were included in the Chesapeake age profiles.

Mount Vernon's cattle remains reflect more diversified agriculture as the eighteenth century progressed. Lawrence Washington likely grass-fed his cattle at Mount Vernon during the second quarter of the eighteenth century. While these cattle, like those at contemporary Oxon Hill Manor, may have taken close to four years of age to reach a suitable market weight, the epiphyseal fusion data suggest that this was not necessarily practiced at Mount Vernon, with some of the cattle being slaughtered and consumed at the estate at less than two years of age during this time period. The clear increase in older cattle at the plantation in the third quarter of the eighteenth century reflects an increase in the demand for secondary products, such as dairy and labor.

Although there is some disagreement on the exact number of years an ox can labor, historic and modern sources agree that an ox can work until it is 10 to 15 years of age, with its prime working age from four to eight years old (Anderson 2004:88; Bartosiewicz et al. 1997:30; Conroy 2007; [PGWDE] 1786b, 1793h). Although the Lowcountry probates only ever described oxen as "young" or "mostly old," the Upper Chesapeake probate inventories indicate that oxen lived to at least 10 and 12 years of age (Fold3 by Ancestry 2016; Roy Rosenzweig Center for History and New Media 2006). This is a far cry from the age at which cattle are usually slaughtered for beef, which tends to be 24 to 48 months (see, for example, Miller 1984:312-325). The increase in adult cattle from Mount Vernon represents at least some of the oxen which labored on the plantation in the second half of the eighteenth century. From roughly 1760 to 1770, Washington transitioned his agricultural system at Mount Vernon to one which was solely grain-focused (Fusonie and Fusonie 1998:9), thereby requiring much more plowing and animal labor than the estate had required earlier in the century. Washington worked his oxen until they were eight years of age ([PGWDE] 1793h), accounting for the increased presence of cattle over the age of 48 months in the Upper Chesapeake age profiles from the third quarter of the eighteenth century.

Unlike the Chesapeake sample, the epiphyseal fusion data from the Lowcountry sample encompasses all of the Lowcountry assemblages assessed in this dissertation. These remains indicate that a proportion of cattle were kept past the age of 42 months on Lowcountry plantations throughout the eighteenth century (Figures 42-44), suggesting that grass-feeding was practiced in the Lowcountry throughout the eighteenth century. It is interesting to note, however, that as the eighteenth century progressed, the percentage of specimens representing juvenile cattle in the Lowcountry increased. Although the connections are not as strong as in the Chesapeake, this change, too, may be related to changing husbandry strategies on eighteenth-century Lowcountry plantations.

In the first part of the eighteenth century, many Lowcountry planters were actually ranchers, operating very successful free-range livestock operations. In these early cowpens, cattle were raised specifically for slaughter (Edgar 1998:133-134; Jordan 1993; Otto 1986, 1987). If you earn your living by raising cattle to a profitable market weight, you are not likely to slaughter them as juveniles before they have reached said profitable market weight. As cowpens moved to the inner coastal plain to make room for rice production in the outer coastal plain, Lowcountry planters were now able to

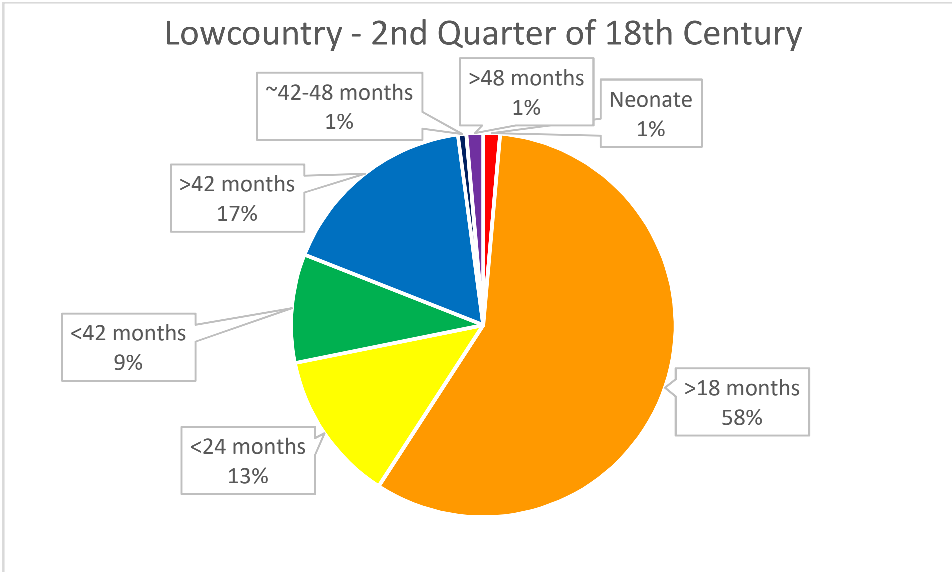


Figure 42. Relative ages at death as indicated by epiphyseal fusion on Lowcountry specimens from the second quarter of the eighteenth century (N=142).

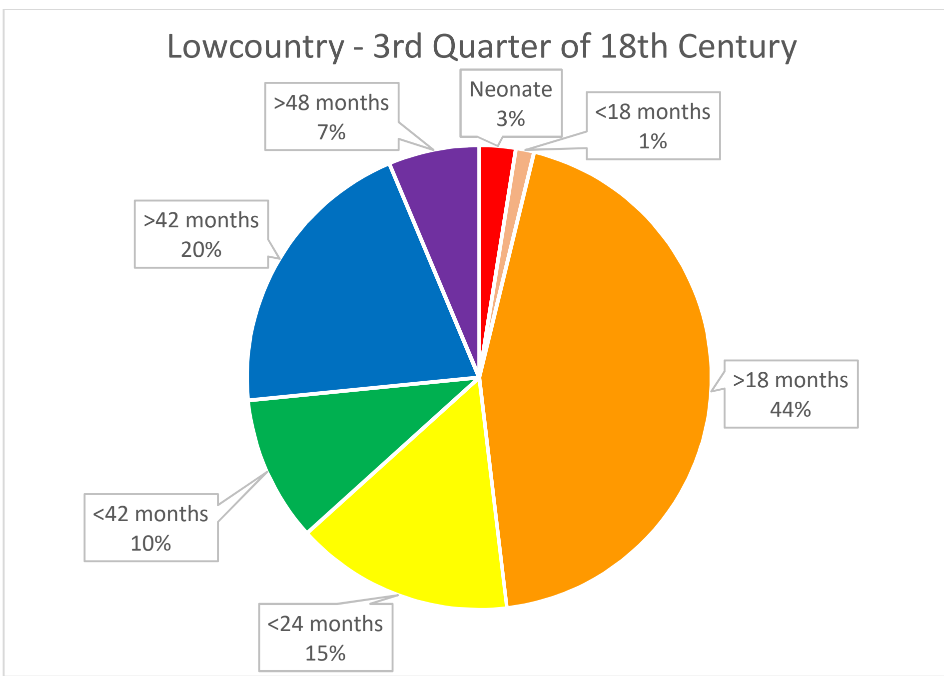


Figure 43. Relative ages at death as indicated by epiphyseal fusion on Lowcountry specimens from the third quarter of the eighteenth century (N=79).

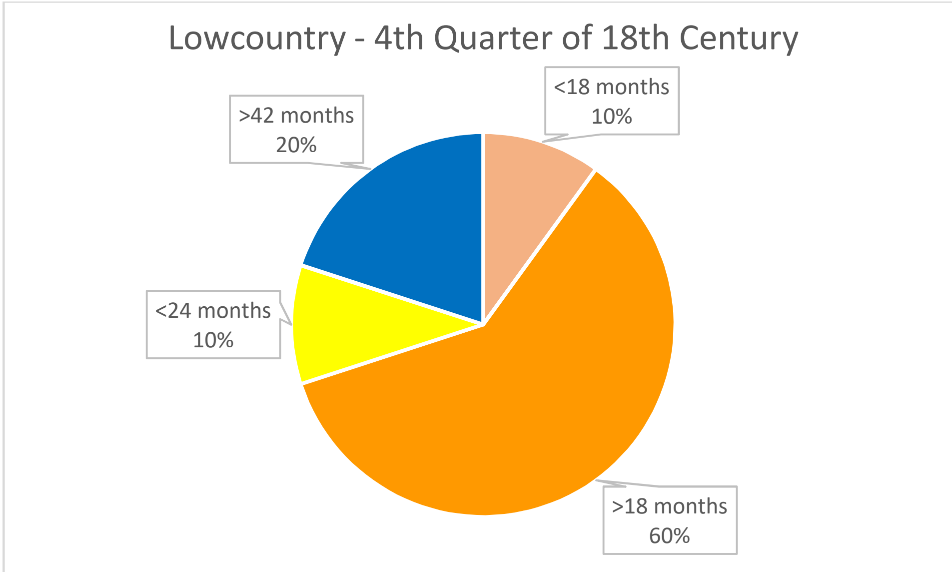


Figure 44. Relative ages at death as indicated by epiphyseal fusion on Lowcountry specimens from the fourth quarter of the eighteenth century (N=10).

participate in both ventures. Cattle kept at the rice plantations were more likely to be those destined for home or local consumption than those kept at the cowpens. Therefore, planters could now slaughter their cattle for home consumption at any age they chose—including as veal calves or as juveniles—without dipping into their profits. The small amount of two- to three-year-old cattle represented throughout the eighteenth century in the Lowcountry may be the result of selecting those individuals for sale in the market economy, as was common with the success of the early-eighteenth-century livestock industry. In contrast, the greater range of ages represented in the third quarter assemblage suggests more diversification at the plantations, perhaps with cattle providing multiple products and services such as dairy and traction power. Future research comparing the Lowcountry plantation data with the rich faunal data from Charleston are likely to reveal further details on the selective slaughter of animals at certain ages for home consumption versus market sale.

Because of the large sample sizes of metacarpals needed to distinguish the sex ratios of cattle, these ratios were not analyzed for temporal change within each region (see Appendix B for histograms of temporal change). Rather, they were simply analyzed for regional differences. Both the Chesapeake and the Lowcountry assemblages exhibited bimodal distributions of the breadth of the distal end of metacarpals (Figure 45 and Figure 46). This distribution suggests that female cattle are represented by the cluster on the left and male cattle are represented by the cluster on the right. In both regions, the purported male cattle were more numerous than female cattle. However, given the small number of measurable metacarpals, especially from the Lowcountry, the definitive labeling of each cluster is suspect.

Regardless, it is interesting that mature males appear to be more common in the assemblages than do mature females. Only fully fused elements can be accurately measured, so the individuals represented in Figures 45 and 46 are at least 24 to 30 months of age (Silver 1970:285). Depending on the feeding and fattening strategies in place, cattle were usually slaughtered for beef around 24 to 48 months of age (see, for example, Miller 1984:312-325). Therefore, it is difficult to say with any level of certainty whether these mature males were steers whose metacarpals had fused just before they were slaughtered or if they were aged oxen who had spent years laboring on the plantations. Although cows can be used as draught cattle (and as beef cattle for that matter), the use of castrates is more common because they tend to attain a greater size than females (Bartosiewicz et al. 1997; Conroy 2007:2). As stated in Chapter 5, the highly

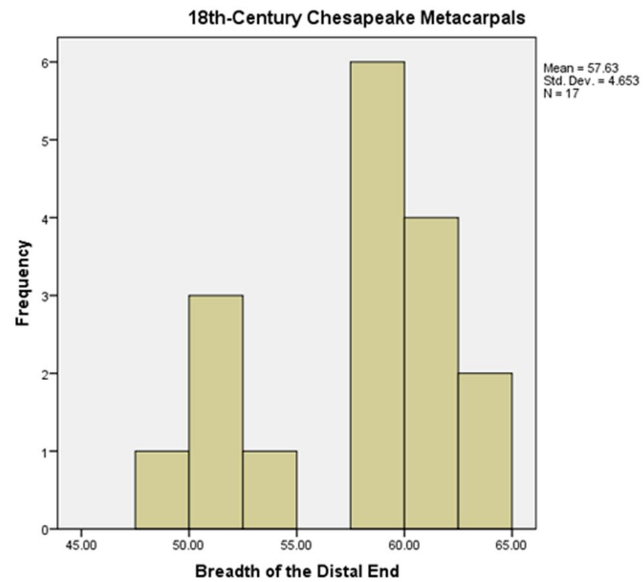


Figure 45. The breadth of the distal end of metacarpals from the Chesapeake.

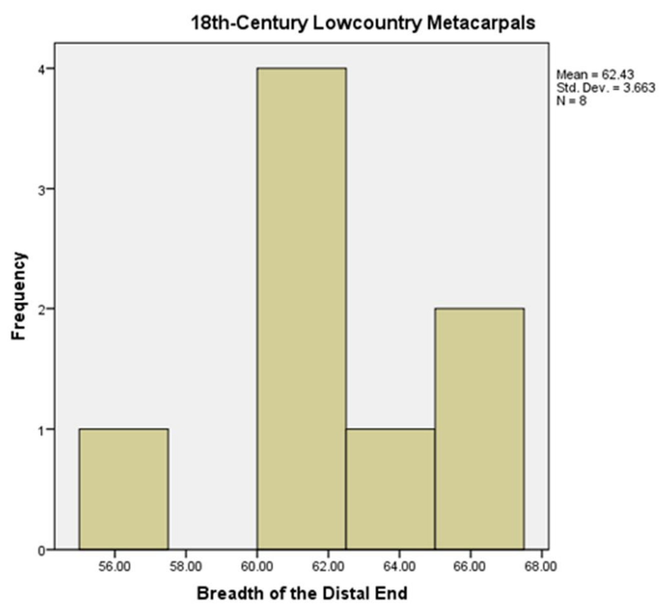


Figure 46. The breadth of the distal end of metacarpals from the Lowcountry.

pathological distal metacarpal from the eighteenth-century Chesapeake, 18PR175-257, was likely a male. Similarly, specimen 4342 from the third quarter of the eighteenth-century Lowcountry had an mPI of .222, whereas the other two specimens from that sample both had an mPI of .000. With a distal breadth of 64.46 mm, specimen 4342 was also likely a male. Therefore, there does appear to be a link between the severity of pathology and the likely sex of the individual, with the most highly pathological specimens coming from suspected males. This suggests that on eighteenth-century plantations in both the Chesapeake and the Lowcountry, working cattle were predominately male oxen.

Cattle Herd Management on Eighteenth-Century Plantations

While the Chesapeake and the Lowcountry both experienced periods of successful free-range cattle husbandry, by the eighteenth century, the second-growth grazing grounds of the Upper Chesapeake's abandoned tobacco fields were being converted into wheat fields. Cattle in the Chesapeake could no longer fatten themselves sufficiently through gazing, so planters penned them, producing three-fold effects. Through penning, planters were able to fertilize their fields with cattle manure, to feed their cattle on the stubble left after the corn and wheat harvest, and to readily utilize the labors of cattle as plow- and cart-pullers. Thus, cattle in the eighteenth-century Chesapeake experienced a much more hands-on form of husbandry than was seen in the previous century. In contrast, the free-range cowpen system of cattle husbandry continued throughout the eighteenth century in the Lowcountry (Otto 1986:124; 1987:24). Although cowpens were distinct from plantations in location, agricultural goals, and social arrangement, plantations often utilized similar cattle husbandry strategies as cowpens, creating a system of cattle husbandry throughout the Lowcountry in which humans played a more passive role than they did in the Chesapeake.

The amount of detail included in probate inventories demonstrates the level of human involvement in cattle husbandry in each region. As Beaudry (1980:122) notes, the use of phrases such as “head of cattle” or “cattle young and old” rather than individually enumerating the different cattle in the probates may be related to the cattle’s availability, or rather unavailability, for individual inspection given their ranging in the woods or being out in pasture. The differences between the Chesapeake and the Lowcountry in this respect are remarkable. In the Lowcountry probates, five plantations (or 1.88% of the total inventories) did not have a count of cattle recorded; they were simply recorded as “a parcel of cattle” or the “stock of cattle.” Moreover, eight inventories (or 3% of the total inventories) from the Lowcountry could only include an estimate of the number of cattle such as Benjamin Smith’s 1771 inventory which included the “stock of cattle, supposed about 25 head” (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume Y: 369-377). Granted, this was a very small proportion of the Lowcountry inventories which could not give a definitive count of the cattle present. However, given that every one of the 171 probates from the Upper Chesapeake were able to enumerate the exact number of cattle on each plantation, the lack of direct counts of cattle in the Lowcountry becomes more apparent.

Furthermore, as can be seen in Table 8, Upper Chesapeake probate inventories recorded the age of at least one bovine much more regularly than did Lowcountry inventories. This suggests a level of familiarity with cattle in the Chesapeake that was not observed in the Lowcountry. In the Chesapeake, cattle were not only available for inspection much more readily than in the Lowcountry, but Chesapeake executors also had much more detailed knowledge of the cattle which they were presenting to be inventoried.

Table 8. Percent of Plantation Probate Inventories Listing Cattle Ages

	Chesapeake	Lowcountry
1740s	88.89%	11.11%
1750s	76.47%	9.62%
1760s	81.82%	8.22%
1770s	77.42%	12.79%
1780s	68.18%	20.00%

This level of familiarity is also discernable in the practice of listing the names of cattle in the inventories. Although it was by no means a popular practice in either region, it was observed in the Chesapeake. Only two probates from the Upper Chesapeake listed a name for any of the cattle enumerated (Roy Rosenzweig Center for History and New Media 2006). Interestingly all five of the cattle named in these two probate inventories were oxen. “Duke,” “Buck,” “Red,” “Lyon,” and “Punch” all attest to the close daily interactions occurring between working cattle and plantation residents in the eighteenth-century Chesapeake, interactions which were closer than those between non-working cattle and plantation residents.

Overall, the probate data indicate much more involvement in cattle husbandry in the eighteenth-century Chesapeake when compared to that in the eighteenth-century Lowcountry. This comes as no surprise given the trajectories of agricultural production in each region. Throughout the eighteenth century, the Chesapeake increasingly grew crops which relied on animal power. Not only this, but with the large-scale switch to wheat production in the region, livestock and crop husbandry became increasingly entwined. British agricultural practices which had seemed so distant in the seventeenth century were finally realized in the eighteenth century, with many Chesapeake planters turning to British agricultural manuals for information on incorporating livestock into the agricultural cycle to increase both crop yield and the number of animals which could be raised on a tract of land (Walsh 2010:419-420). Livestock readied the fields, ate the excess crops, cleared the fields of stubble after harvest, and manured the fields so that even more crops could be grown the next year (Carr and Walsh 1988; Carson et al. 2008:48; Gray 1933; Walsh 2001, 2010). All of these factors meant that livestock, including cattle, were part and parcel of the eighteenth-century Chesapeake plantation landscape and were encountered by all plantation residents and visitors on a regular basis.

To facilitate their incorporation into the grain cycle of the eighteenth-century Chesapeake, cattle were increasingly penned. At Mount Vernon, Washington penned his cattle directly in the fields after the summer harvest. Sometimes referred to specifically as “cowpens,” these pens were made of “poles & crotches” ([MVDA], Farm Combine Document, Farm Reports, 1794) and were moved regularly so as to optimize the fertilization of the underlying ground. In 1793, Washington told his nephew and interim farm manager, Howell Lewis, to "desire all the Overseers to be very regular in penning their Stock, and not to keep the Pens long in a place. The doing of the latter destroys the use of manure, for one part of the field is made so rich by it, that the grain all lodges; & the rest is left too poor to bring anything" ([PGWDE] 1793c). After the pens were moved, the grounds of the old pens were plowed to better enrich the soil with the manure and to prepare the ground for subsequent planting ([GWPLC] 1785-1786).

Mount Vernon also utilized temporary structures to protect cattle and livestock from bad weather during the winter months ([PGWDE] 1793f). In addition to the barns and stables at each of Mount Vernon's outlying farms, "farm pens" could be hastily constructed and provisioned during the winter months. Enslaved laborers built farm pens in the fields in November or whenever the weather grew too cold for the cattle to stand in the open, using straw and corn stalks to cover the pens and to litter the yards around the pens ([GWPLC] 1785-1786; [MVDA], Farm Combine Document, Farm Reports, 1789-1798; [PGWDE] 1798). Similar to the cowpens, farm pens supplied the fields in which they were constructed with valuable manure. Both temporary cowpens and farm pens required investment in enslaved labor and in land; labor was necessary to construct and to move the pens and ample land was required so the pens could be regularly moved to distribute the manure. Washington's system of penning and the rotation of these pens to different areas showcase not only his extreme wealth but also his foresight into the profitable integration of animal and plant husbandry. Washington was an innovator in Upper Chesapeake agriculture and many of his contemporary planters, both elite and middling, emulated his hands-on approach to cattle husbandry to the best of their abilities, as evidenced in their detailed probate inventories.

The penning of stock in both the summer and the winter ensured better control and general awareness of the stock. By penning stock, the overseers and enslaved laborers came into frequent contact with the cattle which might ultimately be trained as working oxen, thus beginning the relationship between animal and handler which is essential to that animal's subsequent role as a working ox. Laborers and stock-tenders could assess both the personality and physical condition of potential oxen to determine which individual was best suited for which tasks. Penning also allowed for the observation of the natural herd structure of potential working oxen. When training oxen to the yoke, drovers had to be aware of the natural dominance structures already in place in the herd and insert themselves into that hierarchy (Conroy 2007:56-68).

In addition to assisting the training of working oxen, the regular penning of livestock allowed for more direct control of their husbandry. As opposed to a free-range husbandry system in which animals were only penned once or twice each year and culling was instantaneous, the regular penning of livestock allowed for an easier separation of animals which were being fattened for slaughter or sale from those which were simply subsisting as "out stock" ([MVDA], Farm Combine Document, Farm Reports, 1794). This, in turn, aided in the discriminate feeding of animals destined for different purposes. Additionally, regular penning of livestock meant that individuals came into frequent contact with humans who could then judge fitness throughout the year. George Washington demanded that his overseers "inspect their respective Stock of Cattle, accurately, and if there be any old oxen, Steers, or Cows, which from their ages or other causes, seem to be upon the decline, to select them; that they may be turned on the Meadows or elsewhere, to recruit & be sold" ([PGWDE] 1793e). Culling was very important to cattle husbandry at Mount Vernon, as Washington believed that it rendered the remaining stock healthy and thriving ([PGWDE] 1793a, 1793e, 1793f). Culling and castration also allowed for the practice of selective breeding, thereby breeding for specific traits for specific purposes.

In the Lowcountry, on the other hand, planters and stock-keepers maintained a relatively passive role in cattle husbandry. As evidenced by the lack of detail in the probate inventories, Lowcountry plantation residents had less familiarity with the individual cattle that lived on the plantation than did those residents of plantations in the Chesapeake. Although the cattle which lived on Lowcountry plantations were not raised in a true cowpen system, vestiges of free-range husbandry remained in the outer coastal plain. Cattle regularly ran in the woods, but would sometimes be fed corn blades and hay in the winter (Dunbar 1961:126). This practice of allowing cattle to roam the woods is also apparent in the probate inventories, with James St. John's 1743 inventory recording three cattle "in the woods" and David Hext's 1755 inventory recording four cattle "roaming out which could not be gotten" (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774). Additionally, Lowcountry inventories occasionally differentiated between "wild" and "tame" cattle, the former likely referring to those which were roaming in the woods while the latter may have been penned. At Sir John Colleton's plantation, he had "94 head of running cattle" in addition to his "35 head of working oxen" at the time of his 1777 probate (Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume CC: 267-273). Therefore, the keeping of some cattle free-range did not preclude Lowcountry planters from also keeping working oxen.

The tradition (and continuation) of free-range cattle husbandry in the eighteenth-century Lowcountry is evident throughout the probate inventories. The inventories showcase detail in the locations of where to find the cattle, rather than details on the cattle themselves. Minimal involvement in cattle husbandry in the Lowcountry meant that plantation residents needed to allow their cattle adequate spaces and resources to establish home ranges with level grazing areas and access to water resources (Barrett 1982:343; Hernandez et al. 1999:263). Then, they simply needed to know the home ranges of the various herds to gather whichever cattle were needed throughout the year.

Cattle would have to be gathered for marking and castrating. Marking was practiced in both the Chesapeake and the Lowcountry. A total of 15 branding and marking irons appear in the Upper Chesapeake probates, while 13 branding and marking irons are present in the Lowcountry probates. Marks for livestock, including ear marks and brands, were to be registered with the government to provide a legal record of livestock ownership (Salley 1912). Thus, while the cattle of the Chesapeake were not as free-ranging as those in the Lowcountry, all were subject to branding and/or ear-marking.

The probate records are relatively silent on the branding or ear-marking of oxen. However, newspaper notices of runaway oxen fill this gap in knowledge. In both Virginia and South Carolina, earmarking was the most common method of showing ownership on oxen (Table 9). Perhaps South Carolina's common usage of both earmarking and hide branding on oxen was also related to its cattle husbandry practices. With so many cattle roaming the woodlands of colonial South Carolina, planters likely chose to double up on their efforts of proving ownership, opting for both earmarking and branding as insurance against false claims to their property. Naturally, the zooarchaeological can shed little light on practices of branding and earmarking. However, two cattle cranial specimens from the second quarter of the eighteenth century at Drayton Hall do hint at other herd management practices, or the lack thereof.

Table 9. Oxen Marks, as Indicated in the *Virginia Gazette* and *South Carolina Gazette*

	Total Number of Oxen Described		Number of Oxen with Earmarks		Number of Oxen with Hide Brands		Number of Oxen with Horn Brands	
	Virginia	South Carolina	Virginia	South Carolina	Virginia	South Carolina	Virginia	South Carolina
1740s	0	4	0	4	0	3	0	0
1750s	6	18	5	14	0	15	0	2
1760s	1	15	1	12	0	12	0	0
1770s	27	6	25	6	0	5	2	0

The Pre-Drayton Assemblage returned two cattle specimens with ante-mortem rounded holes on the occipital bone immediately inferior of the nuchal eminence of the cranium (Figures 47 and 48). Fabiš and Thomas (2011:348) suggest that such cranial perforations are the result of a hereditary disorder affecting the pneumatisation process, "which results in the localized thinning, or even perforation of the frontal, parietal and/or occipital bones." As a rare, likely-hereditary disorder, the development of such cranial perforations is possibly related to inbreeding as a result of little to no importation of new breeding animals (Fabiš and Thomas 2011).

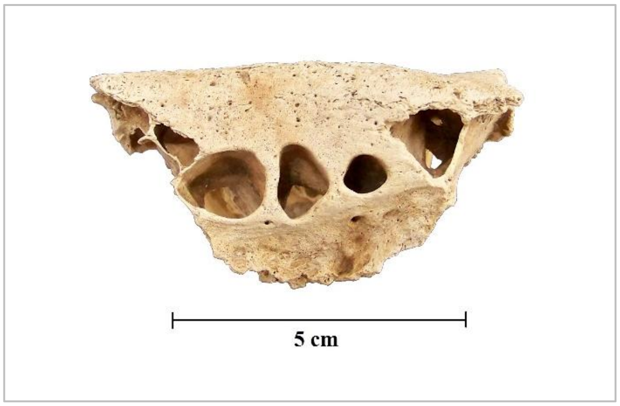
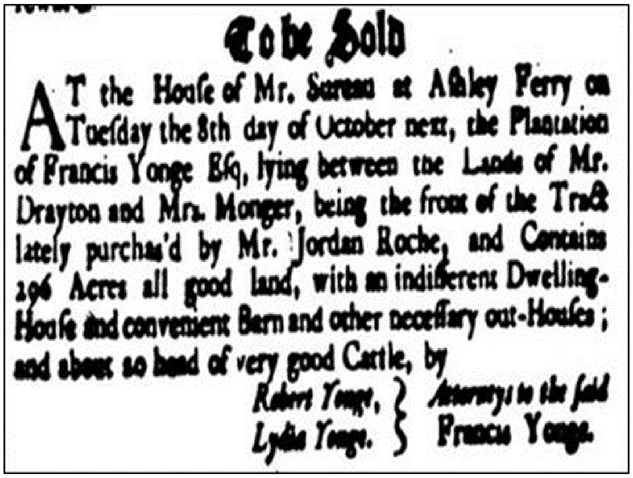


Figure 47. UB 7567, a fragment of the posterior portion of a *Bos taurus* cranium which contains a minimum of four cranial perforations.

Figure 48. UB 7185, a nearly complete *Bos taurus* cranium with a single posterior perforation.

Most Carolinians began raising cattle by purchasing a homestead and acquiring some breeding stock; the cattle took it from there, grazing and reproducing on their own (Otto 1986:122). Late-seventeenth- and early-eighteenth-century South Carolinians imported cattle from Virginia and obtained some Spanish cattle which were stolen from Florida during English raids on St. Augustine. The resultant Carolinian cattle were small, and colonists requested additional stock from New York and Bermuda (Zierden and Reitz 2009:334). Archaeologically, however, cattle from South Carolina do not show a marked increase in size until the nineteenth century, which Zierden and Reitz (2009) credit to the inclusion of better stock in the gene pool. To create a noticeable impact on South Carolina's cattle population in the nineteenth century, this better stock would likely have been introduced in the mid- to late-eighteenth century. With few imports of cattle in the early-eighteenth century—and, therefore, few imports of new genetic material—recessive hereditary disorders, such as cranial perforations, have a better chance of phenotypic expression.

Such a "population bottleneck" may have been felt at Drayton Hall during the time of the Pre-Drayton occupation. In 1734, Francis Yonge's attorneys placed a notice in the *South Carolina Gazette* advertising for sale the estate which would ultimately become Drayton Hall (Figure 49). The estate includes "about 20 head of very good Cattle," a much smaller size than the 200-head herds which were typical in South Carolina just two decades prior (Otto 1986:118). It is unclear whether the cattle herds of the Pre-Drayton occupation were always this small or if many of the cattle had been sold prior to the estate going up for sale. If the herds were routinely this small, though, one can see how hereditary cranial perforations would easily be passed through the generations.



To be Sold

AT the Houſe of Mr. Sereau at Aſhley Ferry on Tueſday the 8th day of October next, the Plantation of Francis Yonge Eſq, lying between the Lands of Mr. Drayton and Mrs. Monger, being the front of the Tract lately purchas'd by Mr. Jordan Roche, and Contains 206 Acres all good land, with an indifferent Dwelling-Houſe and convenient Barn and other neceſſary out-Houſes; and about 20 head of very good Cattle, by

Robert Yonge, } Attorneys to the ſaid
Lydia Yonge. } Francis Yonge.

Figure 49. The 1734 notice in the *South Carolina Gazette* advertising for sale the parcel of land which would be purchased by John Drayton in 1738. (Accessible Archives 2016, South Carolina Gazette, 28 September 1734)

Moreover, the free-range husbandry practices of early-eighteenth-century South Carolina did not encourage much out-breeding. Castration was commonly practiced when branding and marking cattle in the free-range system (Otto 1984:297), but those bulls which were left intact often shared similar genetic material. In herds of feral and free-ranging cattle, female cattle live in “cow-herds” with their offspring, and male cattle live in “bachelor groups.” Female cattle and mature male cattle usually only associate with each other during the reproductive season (Lazo 1994:1134; Lott and Hart 1979:310; Phillips 1993:53-54; Reinhardt and Reinhardt 1981:145; Sowell et al. 1999:1). However, bulls have the ability to detect sexual receptivity, or oestrus, in cows before its actual onset, meaning that solitary bulls or bulls from bachelor herds will approach the cow-herds and guard the cows as oestrus approaches (Phillips 1993:38). As dominance relationships are extremely difficult to modify once they have been established, the dominant bull is likely to guard and breed with the cows with minimal aggression from the other bulls (Bouissou et al. 2001:125-127; Reinhardt et al. 1986:125, 128). This results in a single bull or a small number of dominant bulls routinely passing on their genetic material year after year. Young bulls will challenge adult bulls once they reach two years of age, but, even if they are successful, they are likely to be the progeny of the currently dominant bull and, thereby, passing on the same genetic material (Reinhardt et al. 1986), resulting in the occurrence of hereditary disorders, such as cranial perforations, or the continued small stature of cattle until new stock is introduced.

With Chesapeake planters inserting themselves more directly into the lives of their cattle through more hands-on husbandry practices, they were able to practice more selective breeding, separating their cattle and bringing selected individuals together as needed to produce offspring when wanted (Anderson 2004:87-88). Similarly, at Drayton Hall in the late-eighteenth century, Charles Drayton regularly penned his cattle and routinely moved selected cattle between his various Lowcountry estates, preventing them from freely interbreeding ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820). Therefore, it should come as no surprise that the only cranial perforations observed in any of the zooarchaeological materials came from a time and place—the second quarter of the eighteenth century in the Lowcountry—when cattle herds were experiencing a genetic bottleneck but maintained their numbers through free-range grazing and herd inbreeding. This inbreeding was founded on the dominance hierarchies which pervaded the cattle's everyday life. On the other hand, drovers and carters were able to use their knowledge of the dominance hierarchies to their advantage when it came time to select and to train cattle as draught oxen.

Training and Maintaining Oxen

Training cattle to the yoke is easiest when the animals are calves but not impossible when they are mature. With younger calves, the drover and/or carter is better able to insert himself or herself into the natural hierarchy of the cattle, establishing a relationship with the calves based on respect and dominance. With older cattle, the drover and/or carter already knows the personality of the cattle and does not have to wait for them to mature to work them fully; however, it is more difficult to establish oneself in a more dominant position in older cattle (Conroy 2007:7). In the eighteenth century, this relationship founded on dominance and respect lasted well beyond the training stages, as the drover continued to work with the oxen in the fields and often cared for them once the day's work was over (Moore 1961:92).

On eighteenth-century plantations, cattle were likely trained to the yoke before they reached full maturity. In August of 1790, George Washington's farm manager reported that they were "Gathering young Steers and yoking them" at one of the outlying quarters ([MVDA], Farm Combine Document, Farm Reports, August 14, 1790). This "expedient method" of breaking steers to the yoke usually involved yoking two steers together and leaving them in a fence for days at a time (Ed Schultz, personal communication 2016). Many times, this method did work to acquaint the steers with the yoke and to get them working together as a team. However, there is an account from Mount Vernon of the expedient method failing, as a steer "broke his neck in the yoke" in December of 1790 ([MVDA], Farm Combine Document, Farm Reports, 1790), a mere four months after training had begun. A similar training regime of first acquainting young steers to the yoke was still in use at Mount Vernon in 1797 when carpenters made yokes "to ty up Cattle at Union Farm" ([MVDA], Farm Combine Document, Farm Reports, 1797). Although no direct references to training oxen in the Lowcountry were found in the historical documents, Isaac Nichols's 1773 probate inventory lists "51 head of oxen & steers fit for oxen," indicating that cattle which were destined to be draught oxen had been pegged as such before training even began.

Training young cattle to the yoke took advantage of the natural bonding that occurs in cattle of the same age group. Although the first and often the strongest bond which cattle make is between a cow and her calf, calves also develop strong peer bonds. These peer bonds continue into adulthood, but are not as stable in bulls as they are in cows (Phillips 1993:48-51). Oxen, however, are usually castrated males, meaning that their peer bonds are more stable than those of bulls and are likely a major factor in the calming effect of paired work. These peer bonds continue into adulthood, meaning that oxen are best worked in pairs rather than individually (Conroy 2007; Grandin 1980:24; Phillips 1993:48-51).

Although an ox may be hitched singly, such as for weeding between rows or for pulling a cart through a narrow area (Conroy 2007:141), eighteenth-century planters likely took advantage of the calming effect and increased power of oxen teams. Of the hundreds of probates analyzed in this research, only one listed single yokes. Chesapeake planter Richard Mitchell owned five single yokes and eight regular yokes at the time of his 1781 death, showcasing that teams of oxen were still more popular than single oxen on his plantation (Roy Rosenzweig Center for History and New Media 2006). The trade-off of using oxen in teams, however, is that their net efficiency is reduced so the pair only produces 1.9 times the tractive effort of a single ox (Barwell and Ayre 1982:4). This is a minor setback, though, and a pair of oxen or multiple teams of oxen adequately can perform many of the tasks set before them or, rather, hitched behind them.

This appreciation of the unique relationship between the two oxen of a team is also visible in the listing of the oxen themselves in probate inventories. While Lowcountry inventories usually just listed the total number of oxen present on the plantation, those from the Chesapeake routinely listed oxen as "yoke of oxen" or, similarly, "pair of oxen" (Table 10), acknowledging the close bond between two oxen which regularly work together. Differences in the listing conventions between the two regions are likely an artifact more of the level of human involvement in cattle husbandry than in differences in the number of cattle harnessed together at once. As stated above, the residents of plantations in the Chesapeake appear to have had a more hands-on approach to cattle raising which allowed them to appreciate their cattle more as individuals than as collective herds. With the collective mentality in place when dealing with cattle as a whole, Lowcountry plantation residents applied this same convention to their oxen, although they likely interacted with the oxen much more regularly than they did their free-ranging cattle.

With the presence of free-ranging cattle on Lowcountry plantations and the occasional running of oxen with the other cattle on Chesapeake plantations (see, for example, [PGWDE] 1793h), one might question how oxen were able to be gathered and drawn into work. However, once properly trained, oxen can be easily approached. Additionally, even if oxen are turned out to pasture with other cattle, they will frequently

Table 10. Percentage of Oxen Listed as a "Yoke" or a "Pair" in Probate Inventories

	Chesapeake	Lowcountry
1740s	48.48%	3.59%
1750s	53.54%	3.46%
1760s	57.99%	1.01%
1770s	46.62%	7.92%
1780s	55.56%	0.00%

form their own bachelor group, making them relatively easy to locate (Conroy 2007; Lazo 1994). It would not be uncommon for oxen and milk cattle, because of their need to be frequently worked or milked, to be fenced relatively close to major activity areas. At Mount Vernon, George Washington insisted, "The other large lot, North East of the Barnlan⟨e⟩ is to be appropriated, *always,* as a Pasture for the Milch Cows; and probably working Oxen, during the Summer Season" ([PGWDE] 1799). This fencing of oxen in a highly accessible paddock during the summer coincided with the increased need for oxen to harrow the fields and cart the grains during Mount Vernon's summer grain production.

Occasionally, plantation oxen were housed in barns; however, this usually occurred if and when all cattle were brought into barns in the winter months ([PGWDE] 1799). Stabling oxen for longer than was necessary could be detrimental to their health and work performance. Oxen housed in barns are more prone to ringworm, respiratory problems, and external parasites than those which are housed primarily outdoors (Conroy 2007:34). Therefore, by allowing oxen to graze outside—whether in the same pasture as the other cattle or not—plantation residents allowed the animals to thrive in their natural herd structures and protected them from certain infestations. Outdoor grazing was the norm on eighteenth-century plantations as only 1% and 0.7% of oxen in the Lowcountry and Chesapeake probates, respectively, were listed as "stall-fed."

The feeding of oxen, whether outdoors or in stalls, was required to maintain them in good working condition. In general, steers over one year of age can thrive on a diet of only roughages (Conroy 2007:39). However, working oxen require about 1.5 to 3.8 times the amount of energy than a non-working animal, depending on the difficulty of the labor (Lawrence 1985; Leng 1985:70). This extra energy often came in the form of supplemental feed such as oats or, more often, corn. The presence of stall feeding versus general grazing with sporadic supplemental feeding at different plantations may be related to the quality of the pastures at the plantations. Goe and McDowell (1980:28) calculate that the exercise cattle must undergo while grazing can increase the maintenance energy expenditures of cattle and oxen by 15 to 40%. Furthermore, on poor pastures these energy expenditures may be as much as 170% of the requirements of stall-fed cattle as the grazing cattle must travel long distances in search of fodder. However, with the increased management of pasturelands in the eighteenth-century Chesapeake (Gray 1933; Walsh 2010) and the abundant grasslands and marsh grasses of the Lowcountry (Otto 1987), stall feeding was never a priority for the maintenance of oxen in either region, as evidenced in the very infrequent reference to it in the probate inventories.

At Mount Vernon, Washington only allowed his oxen to be fed supplemental grain when they were working. He also requested that a large number of oxen be kept in reserve so they could be pulled in to labor at any time, writing to William Pearce in 1793, "that by having a number of them, they may, by frequent shifting, always be in good order; and because, when they are only fed, when they do work—and at other times only partake of the fare which is allowed to the other Cattle, twenty yoke is not more expensive than five yoke" ([PGWDE] 1793h).

This keeping of large numbers of oxen, whether they were actively working or not, makes economic sense. As Peter Lawrence, of the Draught Animal Research Network, notes

> If grazing is plentiful but of poor quality, it is probably better to have more animals doing what little work they can rather than to have fewer animals attempting to do more work than the quality of the food permits. Other advantages to be gained from having larger numbers of animals is that the farmer is protected to some extent against the consequences of accidental loss or injury of animals [Lawrence 1985: 63].

Although more Chesapeake plantations had oxen than did Lowcountry plantations, those Lowcountry plantations that did keep oxen kept a higher average number than did those in the Chesapeake, likely reflecting Lawrence's (1985:63) statement. In the Lowcountry, there were not as large amounts of supplemental feed for cattle as there were in the Chesapeake. Although planters continued to grow provisions such as corn and peas during the height of the rice industry in South Carolina, these were likely for human rather than animal consumption. What little surplus corn Lowcountry plantations did have may have been fed to the working animals. With such little fodder readily available, perhaps oxen-owning Lowcountry planters chose to divvy the fodder out amongst numerous working cattle in exchange for each ox providing only minimal labor.

With proper care, an ox could work as long as 20 years. However, few probably labored much past ten years of age (Bartosiewicz et al. 1997:30; Conroy 2007). Englishman Leonard Mascal felt that an ox could live to 15 years old, but "it will serve well to labour till he be ten years, not after so good" (quoted in Anderson 2004:88). George Washington was of a similar belief, writing that "the Oxen may never be worked after they are eight years of age, but then fatted for marked [sic]" ([PGWDE] 1793h). Fattening of old oxen may have been done with supplemental feed, but, most likely, Chesapeake and Lowcountry planters turned their old oxen out to pasture with their other cattle, just as they had done whenever the oxen were not actively working ([PGWDE] 1786b, 1793e). These oxen could then be sold at market or butchered and eaten at the plantation ([DH], The Drayton Journals, Plantation Journals, September 5, 1794; [MVDA], Farm Combine Document, Farm Reports, 1789-1798), thereby completing their transition from an animal which provided a service to the plantation to one which provided a product. As shall be discussed below, equines did not go through such a transition, laboring their entire lives on eighteenth-century plantations in both the Chesapeake and the Lowcountry.

Husbandry of Working Equines on Eighteenth-Century Chesapeake and Lowcountry Plantations

Not all working equines on eighteenth-century plantations were working horses. Rather, the eighteenth century marks the beginning of the working mule in eastern North America. This hybrid creature had its own requirements and its own merits as a working animal distinct from those of working horses. To best understand these differences and similarities between the husbandry of working horses and working mules, one must first explore how each came into being on eighteenth-century plantations.

Producing Working Equines on Eighteenth-Century Plantations

Producing adequate quantities and qualities of working equines on eighteenth-century plantations required not only suitable breeding stock or sufficient assets to obtain the equines but also appropriate practices to train and sustain the working equines. Horses require a relatively large amount of initial investment, but, unlike mules, they are able to reproduce their species once they reach about three years of age (Feist and McCullough 1976:363). The upswing to being a sterile hybrid, however, is that mules are able to direct all of their energies into labor rather than having to split them between labor and reproduction.

To produce mules—the ultimate working equines—planters needed breeding mares and jackasses. Interestingly, four mules from three different plantations were listed in the Chesapeake probates, but no Chesapeake plantations owned jackasses. In the Lowcountry probates, no mules were ever recorded, but Richard Beresford owned two jackasses at the time of his death in 1772 (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume Z:295-300). The Chesapeake mules may have been imported from early mule producing efforts in New England (Lamb 1963; Pomeroy 1825) or may have been the result of jackass breeding tours. The practice of jackasses going on breeding tours in the southern colonies was fairly common in the eighteenth century. George Washington, "Father of the American Mule," placed his jackass "Royal Gift" on a breeding tour of the South in the 1790s (Ellenberg 2007:34). Two decades before, "The Famous Ass Rosano, Just arrived from Spain" embarked on a breeding tour of South Carolina in 1771 (Accessible Archives 2015a, The South Carolina Gazette, October 22, 1771-January 14, 1772) and of Virginia in 1772 (Accessible Archives 2015b, The Virginia Gazette, May 21, 1772). In the ad for his services, Rosano's pedigree was listed:

> He was got by SENHIOR, a noted Ass of Don Alphonso Rodriguez de Alcazer, which SENHIOR, was got by DON PEDRO, belonging to the Duke de Medina Cali; got by BRAVADO, Philip the Fourth's favourite State Ass ; whose Sire was Pope Innocent's PAD, whose Grand Sire was Sancho Panca's DAPPLE, got by XERIFF, which was sent to Isabella of Spain, by Roxana favourite Sultana to Abderman King of Morocco, and got by Osman the Great's SULTLANA; who was got by OTTOMAN, and Ass belonging to Omar, whose Sire was MEDINA, that carried the Prophet Mahomet to Mecca, whose Sire was Semiramis's PRIAPUS, whose Grand Sire was Nebuchadnezzar's BELL, and his Great Grand Sire was Balam's NAMELESS, whose Great Great Grand Sire came with NOAH

> out of the ARK [Accessible Archives 2015a, The *South Carolina Gazette*, October 22, 1771].

To promote the breeding and use of mules throughout the South, pomp and circumstance accompanied the breeding tours of jackasses. Therefore, mule production in the South became not only a matter of creating excellent working equines but also a matter of producing stock with a heralded pedigree. Imagine the social capital that came with being able to say that your working mules were descended from the jackass which "came with Noah out of the ark."

However, producing mules was not always as straightforward as simply allowing a jackass to breed with a mare. Many jacks prefer to breed with jennies. Once a jack has bred a jenny, it is very difficult to get him to breed with mares (Ellenberg 2007:31). Therefore, many mule producers had to keep different jacks for different purposes: one for breeding with mares to produce mules and one for breeding with jennies to produce more jacks.

In producing working equines, whether horses or mules, selective breeding was of the utmost importance at Mount Vernon. Of Washington's first two jackasses, Royal Gift was used for producing heavy draft mules while Knight of Malta was more suited for producing riding and carriage mules ([PGWDE] 1788). His mares, too, were selected for producing mules appropriate for specific tasks. Wishing for carriage mules in 1793, Washington was very curious if his coach mares and chariot mares had dropped foals yet ([PGWDE] 1793b). Five years later, Washington was specifically breeding an old chariot mare named Nancy to Knight of Malta ([DCWL] 1785-1798) likely in an effort to produce additional mules for pulling carriages and coaches.

This selectivity in breeding also extended to breeding working horses, with specific mares and stallions brought together with the hopes of producing offspring well-suited to specific tasks. However, personal writings are less explicit on the breeding of working horses, likely because it was a less novel endeavor that had been perfected after decades of trial and error in the British colonies.

Selecting and Training Working Equines

In breeding working equines, planters selected for certain physical traits and hoped that those physical traits were passed to the offspring. As Miller (Lynn R. Miller 2004:45) notes, the shape and structure of the equine has a "direct relationship to the ability and willingness with which the animal meets the tasks of pulling a regular load in harness…" Beyond that, however, the actions of the stock-keepers and the knowledge the stock-keeper had of the personality and potential of the foal ultimately shaped the working life of that equine. If a colt was not destined for breeding, it was often castrated. In mid-seventeenth-century England, gelding (castration) and spaying (ovariotomy) grew in popularity because the procedures were thought to calm the animals and make them more tractable (Hribal 2003:449-450). Such is a commonly held belief as the removal of the sex organs ultimately disrupts the flow of hormones in the individual, resulting in a more even-tempered animal.

Although spaying is a more invasive procedure than gelding, the probate records do indicate that it was practiced in the British colonies. Four different "spaid" mares owned by four different planters were recorded in the probates from the Upper Chesapeake while a single "white spayed mare Molly" was recorded from the Lowcountry. It should be noted that of the five spayed mares recorded in the probate inventories, four of them were listed with names. Just as with the naming of oxen, this suggests a very close working relationship with these mares. In Beaudry's (1980:131) analysis of probate inventories, she writes, "Several mares were described as *spaid mares*: these were probably riding horses" (italics in the original), without going into whether or not these mares had actually been spayed or were simply mares which were riding rather than breeding horses. Given the historic veterinary literature (e.g., Hobday 1914), it seems reasonable that the spayed mares recorded in the eighteenth-century probate inventories were indeed removed of their reproductive organs to correct for certain poor behaviors associated with continuous oestrus. Until the twentieth century, ovaries were removed through an incision in the flank. Because of the open wound caused by this method, death would be relatively common in mares that ran wild or did not receive any kind of aftercare (Hobday 1914:107-117). Perhaps this is why spaying of mares appears more common in the Chesapeake, where horses more often were confined, than in the Lowcountry, where horses routinely ran wild in the woods, as shall be discussed below.

Despite the recording of spayed mares in the probates, no specific tasks were ever recorded with these individuals. The majority of working equines were simply recorded using the term "horse" (Tables 11 and 12). As Beaudry (1980:130) notes in her probate analysis and as this dissertation also assumes, the term horse is used in the probates to refer to any member of the species *Equus caballus* as well as specifically to adult male members of the species. This clouds our analysis of the selection of specific sexes of horses for specific labors, especially in the Lowcountry where over 99% of working equines were simply listed as "horse" (Table 12). However, it is clear from the Chesapeake probates (Table 11) that mares, geldings, and stallions were all engaged in laboring activities on eighteenth-century plantations. Given the relatively bellicose nature of uncastrated males, it is surprising that three draft stallions were recorded in the Chesapeake probates. However, Henry Holland Hawkins may have left these draft stallions intact so they could be used for breeding as well as for draft, since his draft mares were also used for breeding as evidenced by the entry "one dun draft mare & colt" (Roy Rosenzweig Center for History and New Media 2006).

While the pedigree and sex of the individual played a small role in the potential working life of an eighteenth-century equine, training of the individual played the most important role in the actualization of that working life. To successfully begin and finish training of working equines, planters, stock-keepers, and farm managers needed to have working knowledge of the personality and natural behaviors of each equine. The training of equines is generally more difficult than the training of oxen because of their longer flight distances, meaning that they tend to spook more easily and to run away from perceived danger. This is likely because of horses' relatively poorly developed sense of sight; most horses will shy or bolt away from unknown objects if they are not first given time to allow their eyes to properly focus on them (Lynn R. Miller 2004:27). The

Table 11. Sex Distributions of Working Horses in Chesapeake Probates

	Horse	Mare	Gelding	Stallion
Riding	18	1	2	
Chair	44			
Cart	3	1		
Coach/Chariot/Carriage	20		2	
Wagon	21			
Plow	35	11		
Draft	38	11	4	3
Work	7			

Table 12. Sex Distributions of Working Horses in Lowcountry Probates

	Horse	Mare
Riding	52	
Chair	23	
Cart	24	
Phaeton	3	1
Coach	6	
Plow	4	
Work	11	
Draft	2	
Wagon	5	

"expedient method" of training oxen to the yoke would be extremely dangerous if applied to the training of horses and mules, resulting in spooked animals who would likely tear around the corral, breaking fences and possibly limbs in their attempts to escape the unknown. Therefore, when training equines to pull a cart or a plow, stock-keepers usually used blinders—pieces of tack attached to the bridle which restrict the animal's peripheral vision—to overcome the natural prey instinct to run away when being followed by or approached by an unknown object. Because of the extreme trust that horse and handler have to put into each other when training to pull a cart or plow, Miller (Lynn R. Miller 2004:209) writes, "Driving the horse is, in its finest sense, the true reward of understanding, trust and communication between the animal(s) and the teamsters."

Other aspects of training also were influenced by the natural behaviors of the equine trainees. Horses tend to associate most closely with other horses of a similar rank within the dominance hierarchy (Proops et al. 2012:338). Therefore, if horses were to be worked in teams, it was best to train two horses together which were of a similar age and dominance rank (Budiansky 1997:83, 85; Wells and Goldschmidt-Rothschild 1979:366-367). However, if a horse was to work singly, perhaps as a riding horse or a chair horse, it was best to train it singly, so as to prevent the horse from becoming barn-sour and refusing to work away from the other members of its band.

At Mount Vernon, the training of equines was taken very seriously and, once an equine was trained in a specific task, it was almost always associated with that task. In 1793, George Washington was still in need of a set of carriage mules and feared that he would never have one, writing, "for it appears to me, as if they were converted to the

Plow as soon as they arrive at the age of three, and I left to have recourse to a younger set, and so on; which practice, if continued must cut me out for ever" ([PGWDE] 1793b). Washington could not use mules which had been put to the plow for pulling his carriages because they had not received the training, care, and attention that the he deemed necessary for animals which were to be driven in a carriage ([PGWDE] 1793b). Similarly, the recording of specific "coach," "chair," or "plow" horses in the probate records of both the Chesapeake and the Lowcountry suggests that plantations throughout these regions were home to certain horses trained for very specific tasks, tasks with which they were associated for the rest of their working lives. In contrast, the "work" or "draft" horses in the probate records may have simply been trained to pull but were not specifically associated with plow- or wagon-pulling and likely performed multiple tasks throughout their working lives.

Interestingly, probate records from the Lowcountry also record the presence of unbroken horses on eighteenth-century plantations. Twenty-seven of the 2,604 horses enumerated in the Lowcountry probates were listed as such. However, none of these unbroken horses were ever described as breeding animals, running wild, or running in the woods, indicating that horses which were not currently providing a service to the plantation were also an integral component of the plantation landscape and interacted with the plantation residents on a regular basis.

Managing Working and Non-Working Equines Simultaneously

Similar to the husbandry of oxen, the husbandry of working equines in the eighteenth century was closely linked with the husbandry of non-working equines. Most plantations in the Chesapeake and Lowcountry owned more than one horse, allowing the horses to live in their natural bands, which could be a harem of one stallion and many mares; a bachelor band of mature males; or a mixed band of immature males and females (Feist and McCullough 1976; Keiper 1985; Wells and Rothschild-Goldschmidt 1979). As gregarious animals, horses flourish better when living with other horses than they do when kept as solitary animals, whether working or not.

In the eighteenth-century British colonies, the basic social structure of horses was still the band, although the types of bands can perhaps best be thought of as the free-ranging bands and the corralled bands. Similar to cattle, free-ranging horse bands were much more common in the eighteenth-century Lowcountry than in the Chesapeake. Just over four percent of all of the horses enumerated in the Lowcountry probates were described as “in the woods,” “outlying,” “wood bred,” “wild,” or the like. Although it is unclear whether or not these Lowcountry probate entries were describing horses or not, Henry Guerin’s 1772 probate and Stephen Miller’s 1776 probate listed “9 head of wood creatures” and “woods creatures,” respectively. In both instances these “creatures” were listed directly after the other horses and immediately before the oxen and other cattle, suggesting that these were also free-ranging horses; horses with which the executors of the estate had such minimal contact that they only could be described as “creatures.” However, the social bonds of free-ranging horse bands are extremely tight, meaning that the entire band would roam together over their home range in the woods (Budiansky 1997:82-83; Feist and McCullough 1976:339; Waring 1983), making it relatively easy to locate these horses, such as for the taking of probate inventories, based on the locations and availability of foodstuffs during different times of the year. Additionally, horse bells could be attached to members of the free-ranging bands to assist in locating the horses when needed. The higher prevalence of horse bells on Lowcountry plantations (0.128 horse bells per plantation) than on Chesapeake plantations (0.041 horse bells per plantation) attests to their use in managing free-ranging equines.

In the free-ranging bands as well as the corralled bands of horses, a linear dominance hierarchy was key to the social structure (Proops et al. 2012:338). It is from this dominance hierarchy that planters, managers, and stock-keepers would observe which horses would be best for working together in teams and which ones would perhaps work best singly. In the few mixed species equine herds of the eighteenth-century Chesapeake and Lowcountry, horses would have had the highest dominance, followed by mules, and then by donkeys, with each group tending to associate most closely with other members of the same species (Proops et al. 2012). Therefore, one would not expect to see mixed teams of equines working on eighteenth-century plantations. If one were to hitch a mule alongside a different equid, however, it would likely be a horse, as mules prefer to spend time with horses over donkeys, suggesting that the hybrid mule has a closer affiliation with the species that reared it (Proops et al. 2012:341).

In terms of affiliations between equines and humans, it is likely that the corralled equines had a closer affiliation with humans than did their free-ranging counterparts. Given the presence of more free-ranging horses in the Lowcountry than in the Chesapeake, it comes as no surprise that only one of the Chesapeake probates (0.58% of the total number of Chesapeake probates) was unable to delineate the exact number of horses present on that plantation. In the Lowcountry probates, however, six (or 2.26% of the total number of Lowcountry probates) were unable to record the exact number of horses on the plantation, referring to them instead as simply the “stock” or “parcel” of horses.

Despite this seemingly low level of interaction with horses in the Lowcountry, this minimal interaction was certainly not extended to all of the horses in that region. Rather, the Lowcountry represents a situation in which “running nags” (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume W:217-221) and “Lofty, an English colt Rising three years old” (Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume CC:396-398) were both active constituents of the plantation landscape. In fact, the eighteenth-century Lowcountry probates listed a slightly higher percentage of named horses than did the Chesapeake probates, at 22.2% and 18.7%, respectively (Table 13). The naming of horses and the inclusion of these names in the probate inventories evidences the relationships which plantation residents had with these horses. In the Lowcountry, horses were used primarily for personal transportation; the large number of named riding and chair horses in this region showcases the importance of developing a one-on-one relationship with these horses based on mutual respect. In contrast, horses in the Chesapeake labored in a wider array of tasks. The equal number of named riding, plow, and draft horses in the Chesapeake probates indicates that, although a riding horse may be viewed as a finer, more glamorous horse than bulky plow or draft horse, all were equally important to not only the landscape of the plantation, but also to the economic success of the plantation. Chesapeake planters, farm managers, and stock-keepers recognized the importance of these varied equines to such an extent that the animals' names—and, thus, their individual identities—were ultimately recorded in a legal document.

Table 13. Named Horses in Eighteenth-Century Probate Inventories

	Chesapeake	Lowcountry
Total Number of Horses Enumerated in Probates	1,919.5	2,604
Number of Named Horses Not Associated with Any Work	336	546
Number of Named Riding Horses	5	19
Number of Named Cart Horses	3	4
Number of Named Chair Horses	3	9
Number of Named Plow Horses	5	0
Number of Named Draft Horses	5	0
Number of Named Carriage Horses	2	0

While the personal names of horses were recorded in both the Chesapeake and Lowcountry probates, other descriptors of the animals were not recorded as equally between the two regions. The Chesapeake probates were seven times more likely to include the ages of the horses than were the Lowcountry probates, with over 40% of Chesapeake probates including the age of at least one horse. However, the Lowcountry probates were the only ones to include descriptions of brands on horses, with the brands of 79 horses being listed.

Such seemingly trivial differences in recording styles again point to differences in the animal husbandry practices in each region. In the Chesapeake, horse breeding was more of an industry than in the Lowcountry, with South Carolina importing horses from Virginia and other northern colonies in the late-seventeenth century (Dunbar 1961:127; Gray 1933:55). The Chesapeake tradition of concern over horse breeding carried through into the eighteenth century and likely explains the prevalence of recording the ages of horses in that region; ages of horses would need to be known to assess their suitability as productive breeding stock. On the other hand, in the Lowcountry, free-ranging horses were much more popular than they were in the Chesapeake. With the gregarious nature of horses, horses kept in pens on plantations would join the bands of free-ranging horses if they ever got loose from their enclosures. Although the free-ranging horses listed in the probates were also likely branded, those which were corralled on the plantation were likely more valuable to the plantation as they included the working horses. By listing the brands of corralled animals in the probate inventories, the descendants of Lowcountry planters could easily reestablish their ownership of these valuable animals should the need arise. To be sure, Chesapeake planters also branded and marked their horses. Philip

Ludwell Lee, who died in 1776 in Westmoreland County, Virginia, owned "1 clamp supposed for cutting horses ears" (Roy Rosenzweig Center for History and New Media 2006). However, the recording of such brands and marks in the probate inventories was not a common practice in the Chesapeake, likely owing to the relative lack of free-running horses in that region. Proving your ownership of equines in the eighteenth-century Upper Chesapeake was less of a pressing matter than it was in the eighteenth-century Lowcountry.

In the intertwining of animal and human lives in husbandry, however, owning an equine and proving your ownership of that animal is one thing; taking adequate care of that equine is another completely. In addition to protecting themselves, feeding is one of the highest-priority behaviors amongst feral horses (Fraser 1992:59-60). The unique digestive system of the equine (they have a cecum rather than the chambered stomach of a ruminant) allows horses to literally eat and run without having to ruminate to finish chewing their food. This means that horses can extract more energy out of a more fibrous, lower protein diet per unit of time than can a cow, but per amount of food, horses can extract only 70% the energy that a cow can, resulting in a larger total food requirement for horses (Budiansky 1997:15, 29, 31; Clutton-Brock 1992:20; Janis 1976:763-764).

In addition to horses' overall higher feed requirements than cattle, working horses require more feed than their non-working counterparts. Horses at hard work require about the same amount of roughage as non-working horses but require up to two times the amount of grain or other concentrated foods (Lynn R. Miller 2004:80). At Mount Vernon, only those horses which were kept constantly in the stables at the Mansion

House farm, constantly at work, or constantly ridden were to be fed; all other horses which were "at liberty" or not being worked were able to provide for themselves through grazing and were not to be fed any grain or hay ([PGWDE] 1793d). In the mid-1780s, Washington provided his working horses with corn and rye, but throughout the rest of the eighteenth century, his horses consumed primarily corn, oats, and bran ([MVDA], Farm Combine Document, Farm Reports, 1789-1798; [GWPLC] 1785-1786; [PGWDE] 1786e, 1787a). Similarly, at Drayton Hall in the last decade of the eighteenth century, Charles Drayton fed his horses chopped oats and chopped straw to supplement their grazing ([DH], The Drayton Journals, Plantation Journals, June 17, 1793).

This supplemental feeding of horses was possible in the Chesapeake because of the close integration of animals into the grain cycle with the new husbandry of mixed grain production. As more animals worked the land, grain outputs increased, so animals were able to reap the benefits of their own labors in the form of increased supplemental feed provided by the increased surplus in grains (Gray 1933; Walsh 2010). However, not all agriculturalists were keen on feeding horses excess grains since they required so much of it. Henry Home's 1776 British agricultural manual, *The Gentleman Farmer,* was a popular read amongst Chesapeake planters wishing to adopt more practices of British agriculture, such as grain production, plowing, and the integration of animals into the crop cycles. In his book, Home avidly promotes the use of oxen as working animals over horses because horses are more expensive and require oats, "which would be totally saved by using oxen only" (Home 1776:27). Although George Washington kept Home's book in his personal library and took much advice from it (Fusonie and Fusonie

1998:15), he obviously followed his own advice when it came to using equines as working animals.

The practice of keeping mules was somewhat of a compromise between the wish to utilize the speed of the horse and the wish to keep grain expenses low as with the use of oxen. Although the exact figures are somewhat debatable, estimates from the eighteenth, nineteenth, and twentieth centuries all indicate that, in similar working conditions, mules require less grain than horses (Lamb 1963:29; Pomeroy 1825). Thus, the mules present on eighteenth-century plantations represent the beginning of a shift in animal husbandry to one in which the working equines could work longer and harder with less overhead cost. This shift, however, was slow in gaining momentum, and mules would not make up a significant portion of the southern plantation workforce until well into the nineteenth century (Ellenberg 2007: 13; Lamb 1963:31; Savory 1970).

Whether grain-loving horses or energy-efficient mules, working equines could only supply a finite number of working years to the plantation. Often the number of working years was correlated with the overall care the equine received on the plantation. Exchanges between George Washington and his farm manager Howell Lewis indicate that some of Mount Vernon's plow mares were not working heartily, one of them being "broken hearted" ([PGWDE] 1793i). In his reply, Washington told Lewis that he was not surprised "to having their hearts broke … considering how they are treated; & I fear rode of nights" ([PGWDE] 1793d). To maintain working horses and mules in good condition, Washington wished for them:

> always to be in their Stalls—& well littered & cleaned when they are out of Harness; and they are to be plenteously fed with cut straw, and as much chopped Grain, Meal, or Bran, with a little salt mixed therewith, as will keep them *always* in good condition for work; seeing also that they are watered, as regularly as they are fed. this is their winter feed: for Spring, Summer and Autumn, it is expected that Soiling of them on green food—first with Rye, then with Lucern, and next with Clover, with very little grain, will enable them to perform their Work [[PGWDE] 1799].

With proper care, horses might work to the age of 20 and mules to the age of 30 (Lamb 1963:27). Many working horses in the Chesapeake and Lowcountry probates were simply described as "old." However, a number of Upper Chesapeake working horses were listed near or past the average working age for horses. One riding horse was listed as 26, while other riding horses were 19 and 20 years old (Roy Rosenzweig Center for History and New Media 2006). Similarly, plow horses and chair horses worked well into their 20s. At Mount Vernon, horses which were past their prime or in poor condition were put out to pasture ([MVDA], Farm Combine Document, Farm Reports, 1797). While some working horses may have labored until the day they died, putting old working horses out to pasture was likely a common practice on eighteenth-century plantations, as the Chesapeake increasingly contained managed pastures and the Lowcountry was home to ample woodlands for grazing.

Conclusions

In studying the eighteenth-century Chesapeake and Lowcountry, zooarchaeologists are fortunate to encounter an abundance of both zooarchaeological and historical data. However, each dataset is filled with its own inherent flaws and biases (see, for example, Bowen 1975). Age data was not recorded on all of the faunal material in the Chesapeake sample; probate appraisers did not always record exact numbers of animals. However, by looking at each dataset, one can come to appreciate the nuances of working animal husbandry in each region and how humans and animals interacted and negotiated to create this husbandry.

Overall, planters in the eighteenth-century Chesapeake adopted a more hands-on approach to animal husbandry than did their Lowcountry colleagues. This can be seen zooarchaeologically in evidence of inbreeding in the Lowcountry bovine sample. In the documentary record, this is especially visible in the varying degrees of detail in the animal entries of probate inventories, with Upper Chesapeake probates routinely including exact numbers and ages of both horses and cattle, and the Lowcountry probates including minimal details on the animals present on each plantation. When recording information on the animals present on eighteenth-century plantations, appraisers wrote down what they thought was important about those animals, likely reflecting the overall cultural view of what was important about those animals in that time and place (Beaudry 1980:113). Therefore, animal production, as a whole, was much more engrained in the Chesapeake mindset, as animals increasingly were brought in from free-ranging conditions and actively managed and pastured so as to be integrated into the cycle of mixed grain production. This is not to say that animals in the Lowcountry were not an active and essential component of the plantation landscape. Rather, plantations in each region devoted their energies to animals in different ways. In the Lowcountry, many cattle and horses continued to live in free-range or near-free-range conditions. However, certain animals, such as working animals, had a direct, active relationship with the various residents of the plantations resulting in more detailed probate entries regarding those individuals.

These detailed probate entries of working animals speak to the unique entwining of human and working animal lives on eighteenth-century plantations in both regions. The inclusion of working animals' names in the probates attests to the one-on-one relationship humans had with these animals and the understanding of each of these animals as an individual. Each animal has its own personality and life history, both factors which can greatly influence the working relationship that animal has with a person; naming of the animal and the recording of that name in a legal document rightly evidences the *relationship* occurring between animal and human. On the other hand, the use of phrases such as "yoke of oxen" or "pair of oxen" removes the individual animal from the probate but still evidences the relationship between animal and human. In this relationship, the handler understood the natural grouping behaviors of cattle and took them into account when training steers to be working members of the plantation.

You can lead a horse to water, but you cannot make it drink. All animals on eighteenth-century Chesapeake and Lowcountry plantations were sentient beings with their own wants and needs. Planters, farm managers, herdsmen and herdswomen, drivers, drovers, carters, and riders all had to be cognizant of the animals' wants and needs and work with the animals to strike a balance with their own wants and needs. In working animals, this balance was especially vital, as humans had to insert themselves into the natural dominance hierarchies of cattle and horses to create a working relationship with that animal in which both working animal and handler were safe and satisfied.

Chapter 8. Animal Landscapes of Domination and Resistance

Virginia Anderson (2004:5) writes, in the British colonies, "…animals not only produced changes in the land but also in the hearts and minds and behavior of the peoples who dealt with them." Similarly, Timothy Ingold (1994:2) believes that "…the domain in which human persons are involved as social beings and with one another cannot be rigidly set apart from the domain of their involvement with non-human components of the environment." Human and animal lives are and were so intertwined that to study the one, you must also study the other.

This chapter explores working animals' functions within the social landscape of eighteenth-century Chesapeake and Lowcountry plantations and the repercussions of human-working animal interactions within the social realm. These interactions combined with the physicality of the plantation environment to create animal landscapes of domination and resistance throughout the eighteenth century.

The Social Landscape of Eighteenth-Century Plantations

The social landscape of eighteenth-century plantations was composed of a series of human interactions based on the ideologies of the time and the perceived statuses of the individuals involved. As shall be argued in this dissertation, the interactions which people had with working animals on the plantation fed into these perceived statuses and were a major component of the overall social landscape. As Orser (1988, 1990), Thomas (1998), and Blassingame (1976) make clear, an individual's status on the plantation was fluid and was just one of many statuses depending on the social context. Orser (1988:738) uses the term "social persona" to describe a person's collective of multiple statuses which come together to define a particular social relationship in a particular social situation. The situation-dependency of an individual's social persona on plantations is evident from comparisons of how planters delegated status to their enslaved laborers and how enslaved laborers saw status within their own community.

The Planter's Perspective of Status

From the perspective of the planter, all residents of the plantation fit into a nice, neat hierarchy with his family at the top. As Morgan (1987:37) remarks, "… a profound respect for rank, hierarchy, and status infused the very marrow of the early modern Anglo-American world, and at its core lay the authority of the father-figure in his own household." As the eighteenth century transitioned into the nineteenth, the planter's perceived role at the top of the hierarchy morphed from one in which he played a patriarchal role and physically dominated those under his charge (e.g., Epperson 1990:29-30) to one in which he played a paternalistic role and sought to physically and spiritually protect his enslaved laborers, thereby creating the "fiction of the contented and happy slave" (Morgan 1987:40) which would define the Antebellum South.

Under the planter's patriarchal or paternal gaze, the rest of the plantation community, especially the enslaved community, fell into a predictable and orderly ranking. In large plantations or in plantations with absentee owners, the resident farm manager was next in the hierarchy. White, then black, overseers and drivers were beneath the farm managers. In the Lowcountry, absentee planters relied heavily on their drivers, many of whom were enslaved. Enslaved drivers assigned the daily tasks and often knew more about the day-to-day operations of the plantations than did the planters, earning them a place of high respect in the planter's eyes (Weir 1983:180). Next in the hierarchy were the white and black skilled laborers such as joiners, masons, gardeners, carpenters, and weavers. At the bottom of the plantation hierarchy were the enslaved field hands (Lee 2001:25-28). Those enslaved individuals who worked with animals occupied a niche somewhere between the skilled laborers and the enslaved field laborers, depending on the type of labor they performed alongside working animals and the individual plantation.

This Anglo-centric plantation hierarchy was ultimately an act of power, with the planter upholding what he felt was significant on the plantation over any other possibilities (Thomas 1998:534). This is painfully evident in Alabama native Daniel Robinson Hundley's *Social Relations in Our Southern States* where he writes that the "chief ambition" of an enslaved man was

> to become master's waiting-man, or valet; or, in the case of a female, a lady's maid; next they would prefer to act as a housekeeper, chambermaid, steward, dining-room servant, or groom, or better still, carriage-driver. This last is considered a post of great honor…Even to be wagoner, to drive the plantation

mules and oxen, often becomes a fruitful source of rivalries and ill-feeling. [Hundley 1860:351-352]

Enslaved laborers with the highest planter-attributed status were those who directly served the needs of the planter. The planter assumed that, naturally, these positions were also the ones which the enslaved community held in high esteem. Similarly, those positions which allowed an enslaved laborer to parade the master's wealth through driving his carriage or wagon were positions of status and respect from the planter.

The association between working with horses and having a relatively high status has its roots in English farming traditions. In post-medieval England, individuals who worked with horses tended to be specialists of a higher status, though not always of a higher salary, than other skilled laborers (Brown 1991:40). This is likely reflected in the listing of certain skills with enslaved individuals in the probate inventories of Chesapeake and Lowcountry plantations. The 1775 probate inventory of Upper Chesapeake planter Thomas Addison, for example, is clear to list Jimmy as a 50-year-old coachman, while the overwhelming majority of the enslaved individuals (nearly 90%) do not have any occupation listed (Garrow and Wheaton 1986: Appendix 3). Similarly, in Benjamin Backhouse's 1767 inventory from Charleston, "Whitet Caven a Horse Jockey" is listed under the heading of "Negroes." The other skills listed for Backhouse's slaves include cooks, waiters, housewenches, and a needlewoman, showcasing the importance of Whitet Caven's work to the overall success of the household (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume X:176-180). In the eyes of the planters and the appraisers, these individuals possessed equestrian skills which set them equal to or above the domestics and apart from those enslaved individuals who did not possess any skills or talents deemed worthy of listing in the probate inventory.

In the Chesapeake, especially, individuals who were skilled plow-men and plow-women were afforded a relatively high status amongst the skilled laborers, due to the fact that efficient and profitable grain production relied on the use of plows rather than hoes. George Washington's schedule of crop rotations called for 855 to 1055 person days of plowing per year on each of his four outlying farms of Mount Vernon (Walsh 2001:66). In 1786, Washington wrote to Englishman Arthur Young asking "what a good Plowman might be had for, annual wages, to be found (being a single man) in board, washing & lodging?" ([PGWDE] 1786b), evidencing his high regard and need for individuals skilled at manning a plow. However, Washington rarely paid his plowers; rather, the vast majority of his plow-men and plow-women were enslaved. The listing of the occupations of plow-men and plow-women along with carpenters, ditchers, bricklayers, and house servants in Mount Vernon's Overseer's Account Book (Digital Collections from the Washington Library [DCWL] 1785-1798) indicates that the overseers and managers of Mount Vernon acknowledged the skills of these individuals and saw them as more vital to the plantation than the mere "labourers" and those with no occupation listed.

The level of detail in which planters, managers, or overseers described enslaved laborers indicates the relationship between the two and the relative importance of that enslaved laborer in the eyes of the describer. For example, in George Washington's 1786 inventory of the enslaved laborers at his Mount Vernon estate, he recorded 41 adults at the Home House, the central showpiece of Mount Vernon where the mansion house, kitchens, stables, and other outbuildings were located. Of these 41 adults, only 10 were listed as "past labour," "almost past Service," or simply "Labourers"; the rest were described with a skilled occupation such as gardener, smith, wagoner, or carter ([PGWDE] 1786a). At the outlying plantations, Washington only used the terms "overseer," "overseer's wife," "laboring men" or "laboring women" to describe the remaining 71 enslaved working adults at Mount Vernon. Thus, those individuals with whom Washington interacted on a more regular basis (i.e., those who lived at the Home House) received more detail in the inventory, as Washington had a closer daily relationship with them and likely afforded them a higher status than those "labourers" working on the outlying quarters.

In contrast, the 1791 and 1792 entries for clothing allotments in the Overseer's Account Book ([DCWL] 1785-1798) break down the occupations of individuals on Mount Vernon's outlying quarters as ditchers, carters, ferrymen, and plowers in addition to laborers and overseers (Figure 50). The overseers, having a more intimate relationship with the enslaved laborers, were able to include more detail than was George Washington, the planter. Again, however, this level of detail does suggest a continued top-down hierarchy of the enslaved individuals on the outlying farms, with more skilled individuals such as plowers or ditchers being afforded a higher status than the field laborers. Carr and Walsh (1988:176-177) state that many of the skilled jobs that went along with agricultural diversification in the eighteenth-century Chesapeake, such as plowing, went primarily to men, with enslaved women only occasionally being trained in skilled jobs such as weaving. Their research concluded that enslaved women were primarily the unskilled field laborers on grain-producing Chesapeake plantations. While this may have been the case in the early and middle years of diversification, at the end of the eighteenth century at Mount Vernon, skilled plow-women outnumbered plow-men. Thirteen plow-women and eight plow-men labored at Mount Vernon in 1791, and 14 plow-women and 11 plow-men labored at Mount Vernon in 1792 ([DCWL] 1785-1798). Thus, not all women who worked in the fields of Mount Vernon were at the bottom of the plantation hierarchy. George Washington, and any other Chesapeake planter with enslaved plow-women, would have appreciated their skills just as much as they would have the skills of an enslaved plow-man.

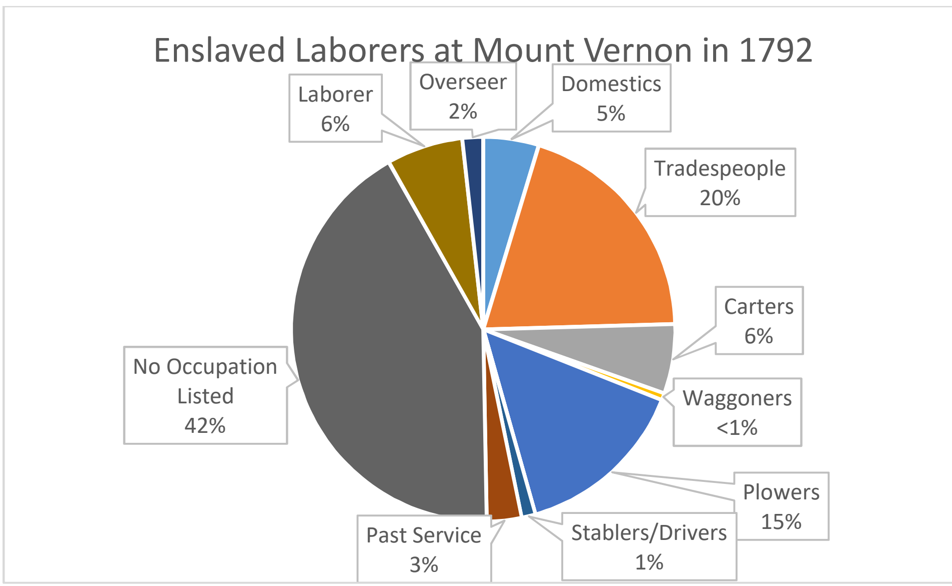


Figure 50. The labors associated with the enslaved individuals of Mount Vernon, according to the 1792 clothing allotments in the Overseer's Account Book.

Enslaved individuals who worked with horses, mules, and oxen to move goods and products across and through the plantation landscape also were esteemed by the planter. Of the over 400 enslaved individuals listed in Thomas Elliott's 1761 probate inventory from St. Paul's Parish, South Carolina, only eight had any occupation associated with them. One such individual was "Sam the Carter," indicating that his ability to drive a cart pulled by either horses or oxen was something of which the executors and appraisers were well aware and respected (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume T: 554-565). Similarly, runaway notices from South Carolina indicate that planters were aware of and appreciated the skills of their wagoners and carters. Although it was relatively unusual for Lowcountry planters to list the occupation of a runaway in newspaper notices, a 1780 ad in the *South Carolina American General Gazette* listed the occupations for six of the 14 runaways. The occupations listed included three sawyers, two carpenters, and a "plowman, waggoner" (Meaders 1975: 293), once again indicating that working with animals was a noticed and appreciated skilled occupation on eighteenth-century plantations.

Planters and overseers also afforded a respected status to enslaved individual who tended to the working and non-working animals of the plantation. Overseers often assigned elderly and disabled men to work as gamekeepers and cowherds responsible for the plantation livestock (Russo and Russo 2012:171). On George Austin's South Carolina plantation, "Old Jupiter" worked as a stock keeper well into his sixties (Fold3 by Ancestry 2016, Inventories of Estates, 1772-1785, Volume AA: 42-51). With the use of the title "Old," Austin's 1774 probate is a manifestation of the transition to the paternal phase of slave ownership, where planters began to acknowledge family connections and ages of individuals, taking on a different relationship with their elderly slaves and respecting the contributions they made to both the plantation enterprise and the overall enslaved community (Morgan 1987). Similarly, at Mount Vernon, George Washington entrusted the care of his cattle to “Old Frank” while Peter and Godfrey tended to the jackasses, mules, and mares of the Home House ([MVDA], Farm Combine Document, Farm Reports, 1789-1798). While Washington took paternalistic care of Frank in his old age and gave him a respected, but not very labor-intensive job, Washington likely respected Peter and Godfrey because of their great responsibilities, responsibilities which were essential to the success of Mount Vernon’s mule breeding enterprise.

In his 1793 contract with farm manager William Pearce, George Washington made it clear that the attendance of the jacks and horses at Mount Vernon was a duty of importance on the same level being a ditcher or a spinner, writing that Pearce was to

> superintend, and manage to the best of his skill and judgment, the interest of the said George Washington at Mount Vernon and it’s [sic] Dependencies, comprehending the several farms, Mill, Fishery, Tradesmen of different kinds, Ditchers, Spinners, the person who has charge of the Jacks, Stud horse, mules, &ca; and will enter upon the duties thereof on or before the first day of January next ensuing. [[PGWDE] 1793b]

From the planter’s perspective, the plantation was his domain and he rested comfortably atop the overall plantation hierarchy. The planter filled in the rest of the hierarchy as he saw fit with those individuals who served his needs directly or whom he viewed as serving the needs of the plantation better afforded a higher position than those who did not. Records from the Chesapeake and the Lowcountry indicate that working with animals in a position such as a carter, plower, or wagoner was deemed a skill.

Planters throughout the British colonies may have rewarded enslaved skilled laborers with additional food, alcohol, clothing, or freedom of movement, as was practiced in the antebellum Lowcountry (Edelson 2006:84). Such perks were just one of the benefits attained from an enslaved individual's interactions with animals. Other such benefits were those social advantages one gained within the enslaved community.

The Social Landscape of the Enslaved Community

Slaves operated within multiple social landscapes simultaneously, and the various statuses of each individual did not always carry over from one landscape to the next. As Blassingame (1976:139) writes, "The degree of personal contact a slave had with whites was inversely related to his or her status in the quarters," meaning that enslaved overseers, drivers, and domestics had some of the longest workdays and some of the lowest statuses amongst those in the enslaved community. Rather, those with a high status in the enslaved community were those individuals who had skills or occupations which allowed mobility, freedom from constant supervision, the opportunity to earn money, or provided a direct service to the enslaved community (Blassingame 1976:141-142). Therefore, enslaved individuals who worked with animals also had a relatively high status within the enslaved community but for entirely different reasons than those when viewed from the perspective of the planter.

Although it was perhaps not as marketable a skill as being a carpenter or a blacksmith, the ability to effectively train and manage oxen, horses, or mules did afford some enslaved laborers the opportunity to earn cash. Drovers, teamsters, and jockeys would occasionally hire out their labor, earning tips and wages and additional respect amongst both the enslaved and the planter class (Blassingame 1976:142; Windley 1995:81). Similarly, grooms or stock-keepers might earn tips from grooming the horses of the master's guests (Russo and Russo 2012:172), again increasing his or her financial and social standing within the enslaved community.

Philip Morgan (1991:21) notes that enslaved Africans often came from areas of West Africa where horses were a badge of elite status. Even working with horses likely carried similar connotations of high status within the enslaved community. Perhaps the most appealing aspect of being skilled in working with animals, however, was the ability to move within and outside of the plantation. In both Virginia and South Carolina, enslaved individuals were not allowed to leave the plantation without the consent of the planter, usually in the form of a written ticket, or in the company of a white person who could vouch for them (Windley 1995:4-5). Mobility afforded enslaved individuals some of the highest status in the enslaved community. In the Lowcountry, two to three enslaved drovers would drive three or four yoke of oxen hauling carts full of rice from inland plantations to landings so the rice could be shipped and sold downriver (Drayton 1802:141-142). These drovers were able to leave the confines of the plantation even if only for a short while.

In the Chesapeake, too, enslaved individuals who worked with traction animals were able to escape the plantations while performing certain tasks. Enslaved wagoners and carters at Mount Vernon traveled to Alexandria on occasion, hauling lumber, hay, flour, and other goods back and forth from the plantation and markets in town ([MVDA], Farm Combine Document, Farm Reports, 1789-1798). Even if they were not able to leave the plantation as often as the wagoners and carters, the plow-men and plow-women of Mount Vernon also had a relatively high degree of mobility, often moving from one quarter to another during the height of plowing season ([DCWL] 1785-1798; [MVDA], Farm Combine Document, Farm Reports, 1789-1798; [PGWDE] 1786d). This mobility allowed plow-men and plow-women to interact with the field hands of the other quarters, possibly passing messages back and forth between friends and families separated on the different quarters of the plantation, thereby providing a direct service to the enslaved community and, again, increasing the individual's status within the community.

The high esteem afforded to mobility—and, by extension, to those who worked with oxen, horses, and mules—was related to much more than simply movement; it was related to what one was able to do with that movement. In being able to move across and outside of the plantation, enslaved carters, wagoners, drovers, plowers, and other skilled craftspeople could more readily undermine the structures of power present on eighteenth-century plantations. This undermining of power structures constitutes the animal landscapes of resistance discussed later in the chapter. First, though, one must finish exploring the various power structures on Chesapeake and Lowcountry plantations, including the ways in which the social landscape was manifested in the physical landscape.

Physical Manifestations of the Social Landscape

The physical features of plantation landscapes were not just ornamental. As Shackel and Little (1994:98) note, these features were "also expressions of baroque and Renaissance ideals, expressions of emulation, assertions of power over the natural environment, and sometimes vehicles used to display control and reinforce hierarchy." The vast majority of landscape features were chosen or placed in such a way as to express the ideals of the planter or to showcase the planter's power and control. Planters viewed buildings, animals, and people as objects which he could manipulate on the plantation to create the landscape he desired.

The rich archaeological and historical records of Mount Vernon and Drayton Hall allow one to reconstruct—even if just mentally—portions of the built environment of an elite Upper Chesapeake and Lowcountry plantation, respectively. From these mental and physical reconstructions, one can see how the physical attributes of late-eighteenth-century plantations contributed to the animal landscapes of those regions and their associated social landscapes. Furthermore, by delving deeper into the animals of the animal landscape, one can appreciate how the animals themselves contributed to the overall social landscape through their placement and through their labors.

The Built Environment of the Animal Landscape

In her analysis of eighteenth-century plantation sale notices in the *Virginia Gazette*, Wells (1993) concludes that the language of the listings and the order of the buildings in the listings indicates how planters viewed their physical worlds. At the top or center of the planter's world was the principal dwelling house, "the vantage point from which a planter surveyed and dominated his idealized landscape and its ranked sets of conveniences" (Wells 1993:28). These "ranked sets of conveniences" included outbuildings, fields, and paddocks which were vital to the economic survival and social standing of the plantation. The mansions, outbuildings, and pathways of Mount Vernon and Drayton Hall reflect this ranked order of life on the plantation and how the planter wanted everyone who lived at or visited the plantation to also respect the ranked order of life that permeated eighteenth-century plantations.

The mansion houses of Mount Vernon and Drayton Hall, the center of each planter's world, were both situated on rivers, offering visitors to the estates the option of arriving to the mansions either by land or by water. At both plantations, visitors arriving to the house by land were greeted by agricultural fields. As visitors to Mount Vernon approached, the first glimpse they had of the mansion house was at the West Gate, approximately two-thirds of a mile from the house. Farm fields filled the vista between the West Gate and the mansion house, indicating to visitors that this was indeed a working farm. As Manca (2012:87) writes, "The agricultural holdings were an integral part of the visual experience of Washington's estate." Similarly, visitors to Drayton Hall in the late-eighteenth century passed by fields of rye, peas, oats, corn, potatoes, and other provision crops as they approached the mansion ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820). Although Drayton Hall did not produce crops as commodities at this time, it was still a working plantation, of which visitors would be aware as they travelled down the road to the house (i.e. Zierden and Anthony 2008:11).

From the riverside, however, the approaches to the mansion houses differed, with Mount Vernon being further distinguished as a fully agricultural plantation while Drayton

Hall was portrayed as a country seat. If arriving to Drayton Hall from the Ashley River, visitors were met with an elaborate formal garden. During John Drayton's occupation of the site, it is unknown if the garden was a formal symmetrical garden or if his garden was slightly more informal and asymmetrical in the English Park pattern. Regardless of the layout, the garden likely contained plants imported from Europe to evidence the family's wealth and emulation of popular European tastes (Epenshade and Roberts 1991:21). Devoid of working animals or agricultural fields, this landscape hearkened back to the gentility of the family rather than their agricultural prowess in the Lowcountry. Thus, the landscape surrounding the mansion house was one split between agricultural production and an English country estate, as seen in Charles Drayton's 1790s sketch map of the property (Figure 51).

To be sure, the landscape of Mount Vernon also contained elements of working agricultural plantations and of English country estates. However, the seemingly contrasting elements were integrated more closely with each other, with formal gardens in close proximity to the stables and paddocks for Washington's horses and mules, both key members of the plantation's animal workforce (Figure 52). One of the unique "English country estate" features of Mount Vernon's landscape was Washington's deer park, which was visible to visitors arriving at Mount Vernon from the Potomac River. Situated downslope from the mansion along the river, Washington's deer park was only operational from the mid-1780s to the early 1790s ([DCWL] 1785-1798; [GWPLC] 1785-1786; [MVDA], Farm Combine Document, Farm Reports, 1790, 1791). Marking his elite status while at the same time providing an elegant and natural feature to the landscape, the deer park was eventually replaced by grazing grounds for sheep and cattle.

Thus, the landscape surrounding Mount Vernon's mansion house could easily toggle back and forth between a genteel estate and a working plantation.

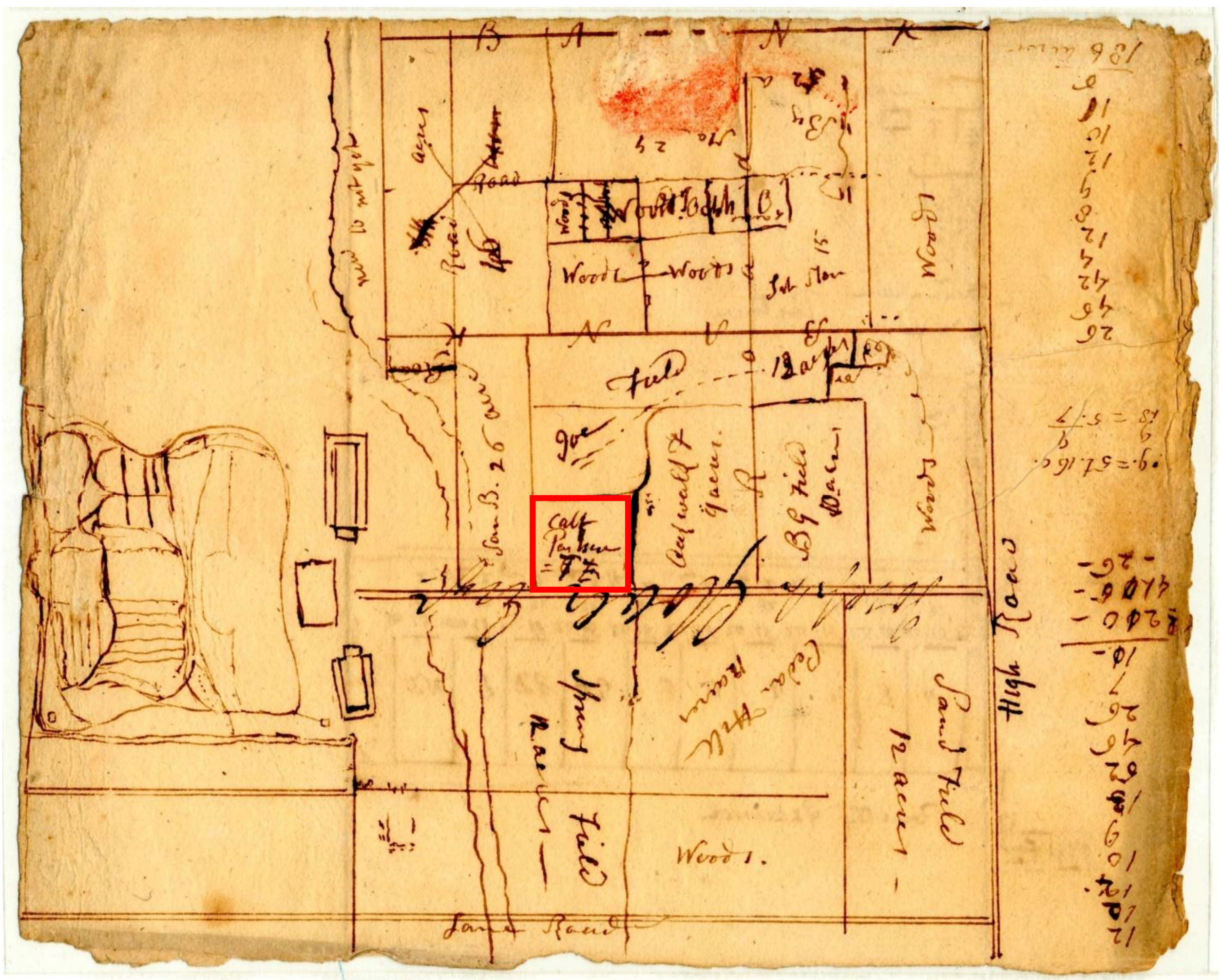


Figure 51. Charles Drayton's 1790s sketch map of Drayton Hall, showing the divide between English country estate and agricultural production. The "Calf Pasture" on the agricultural side of the estate has been highlighted. (From the "Drayton Papers Collection" courtesy of Drayton Hall, a National Trust historic site)

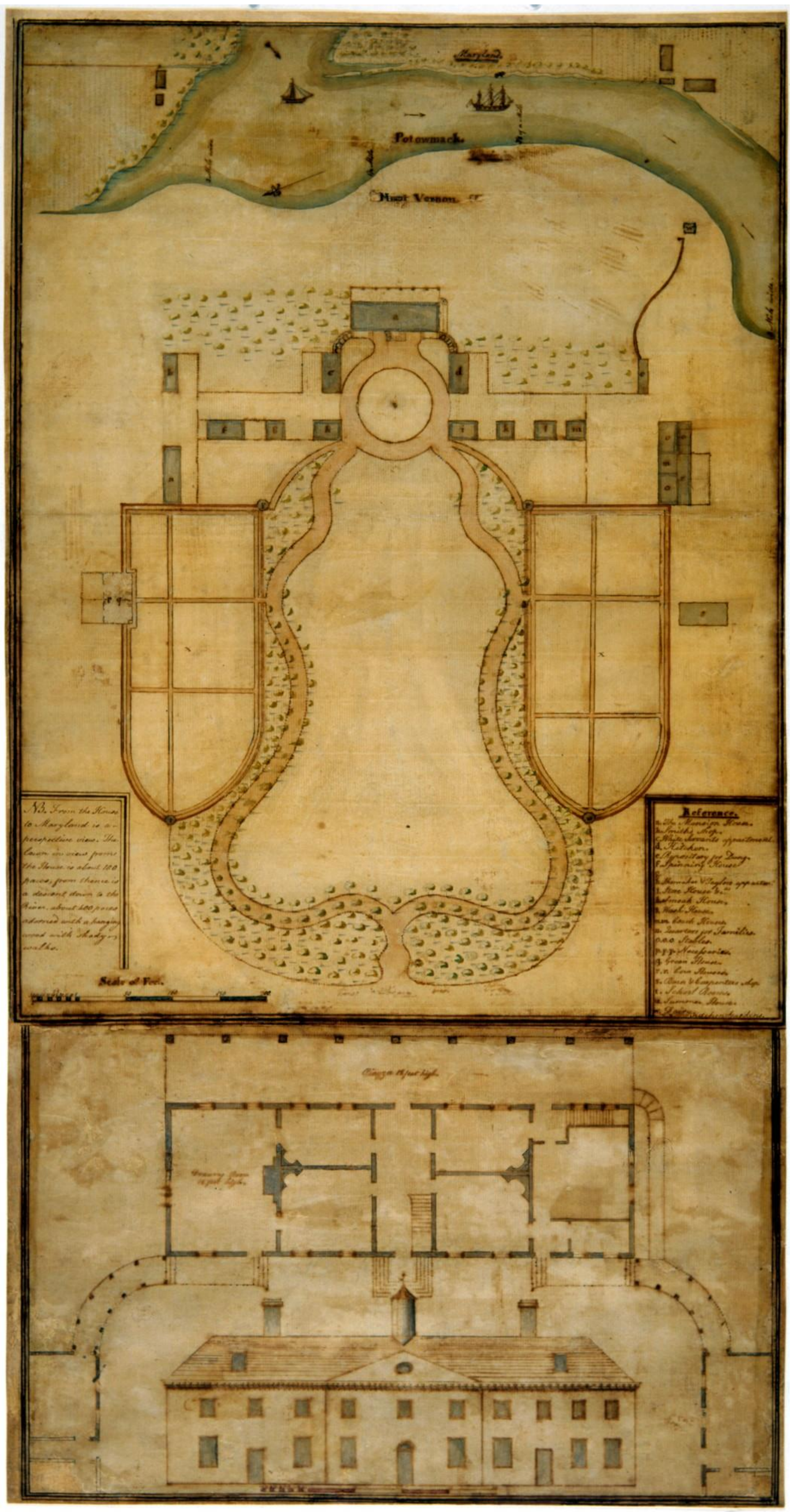


Figure 52. Samuel Vaughan's 1787 plan of Mount Vernon, showing the stables and paddocks near the upper right-hand corner of the shield shaped formal garden. (Courtesy of Mount Vernon Ladies' Association)

Drayton Hall's "country estate" status was further solidified by the lack of visible slave quarters near the Palladian mansion. In the Lowcountry, the owning of slaves was a matter of pride and a well-known sign of one's wealth and status. As John Davis remarked in 1799 (in Jones 1957:86), "He who is without horses and slaves, incurs always contempt." As such, most Lowcountry planters would not hesitate to make enslaved laborers a visible component of their plantation landscape. At Drayton Hall, however, enslaved laborers and, especially, the quarters of enslaved laborers did not fit with Drayton Hall's English estate atmosphere. Therefore, most of Drayton Hall's enslaved laborers lived in quarters camouflaged within the two dependencies which flanked the mansion house and served as kitchen and laundry facilities and within the basement of the main house (Carter Hudgins, personal communication 2017; Epenshade and Roberts 1991:22; Zierden and Anthony 2008:14). At the agricultural plantations of the Drayton family, enslaved laborers were likely highly visible, but at Drayton Hall, their presence was downplayed so as to not distract from the family's showpiece mansion.

The presence of enslaved individuals was also downplayed at George Washington's Mount Vernon but for slightly different reasons. Although Washington wished for Mount Vernon to be viewed as an agricultural landscape, enslaved workers were not a part of the planned visual experience. His outlying farms and their associated outbuildings and slave quarters were far enough from the mansion so as to be invisible to visitors but close enough for him to easily travel between them to oversee the work (Knight 2010:7). Enslaved domestics and skilled laborers who lived and worked close to the mansion house resided in quarters which were disguised within the various outbuildings. In Epperson's (1990) work, he notes that domination over enslaved individuals takes two forms: exclusive and inclusive. Having slave quarters hidden within the ancillary buildings of an estate or having the slave quarters match the planter's overall vision for how his estate should look falls within the inclusive form of domination and may be seen as an extension of the paternalistic role planters began to hold over their slaves starting in the second half of the eighteenth century (Morgan 1987). In a further paternalistic role, Washington even forbade enslaved children from playing on the grass near the house or in the formal gardens.

Similar to Lowcountry planters, many Chesapeake planters highlighted their wealth through their ability to own other human beings. George Washington, however, may have shielded his ownership of enslaved African Americans because he had misgivings about the institution and, at the end of the eighteenth century, had to entertain powerful individuals from northern states as well as foreign dignitaries who looked down on the practice (Manca 2012:95).

Whether conspicuously visible on the landscape of Chesapeake and Lowcountry agricultural plantations or hidden from view for aesthetic or political reasons, enslaved individuals did have relative control of the work areas, including the outbuildings, of the plantation (Upton 1984:70). The placement, style, and function of these outbuildings, however, was still largely governed by the planter and his vision for the plantation. Wells (1993:14) notes, "The quantity, size, and solidity of attendant outbuildings offered an architectural index to each planter's means—the diversity of his activities and the score of his influence." The most common ancillary buildings on eighteenth-century Chesapeake plantations were related to food production and storage, although wealthy planters often had stables to house a few prized horses (Wells 1993:15-20). The stable at Mount Vernon can be seen in Vaughan's 1787 plan of the estate (Figure 52) and is still standing today. Built between 1782 and 1783, this brick stable replaced the old one which burned in 1781 (Manca 2012; Wall 1945:180). Mount Vernon's brick stable was symmetrically built with a pediment in the center and dormer windows on each side of the pediment, both front and back ([PGWDE] 1793a, 1793e). The brickwork of the stable matched all of Mount Vernon's outbuildings, being done in the English bond style (Manca 2012:37-39). The stable, therefore, was an impressive structure which was tied into the overall image of the plantation. In Wells's (1993:21) analysis, she found that only eight outbuildings were described as having heights of two stories: a mill, a barn, two stores, a granary, two lumber houses, and a stable. Height made such buildings prominent features of the Chesapeake plantation landscape, enabling them to further showcase the planter's wealth and status. The stable at Mount Vernon, with its well-planned design, was no different.

Less is known about the stable at Drayton Hall. Although not indicated on the 1790s sketch map, the late-eighteenth-century stable at Drayton Hall may have been in the area east of the main house known archaeologically as Locus 22. In this area, two linear features comprised of brick and mortar rubble and portions of intact brick foundation define a building that was roughly 20-24 feet wide and 45-48 feet long. Zierden and Anthony (2006:54, 63-66) propose that this structure was a late-eighteenth-century stable based on the size of the building, the lack of kitchen- or domestic-related artifacts, and the presence of a number of decorative brass ornaments associated with horse tack and carriages. Although this building may have had a relatively short use-life

(Carter Hudgins, personal communication 2017), it was very finely made, with finish-coat plaster and window glass (Zierden and Anthony 2008:88). This fine structure may have housed some of the Drayton family's prized thoroughbred racehorses (Epenshade and Roberts 1991:21). The Drayton family took pride in their horses and, in the 1760s, the famous English racehorse Pharaoh stood at stud at Drayton Hall (Accessible Archives 2015a, The South Carolina Gazette, April 15, 22, 29, 1766; March 3, 10, 17, 24, 31, 1764; April 6, 13, 20, 1765). Such a prized stallion certainly deserved fine stabling accommodations. Additionally, Pharaoh's English origins further cemented the Drayton family's connections with the motherland and Drayton Hall's reflection of an English country estate.

The emphasis on Drayton Hall's country estate aura was certainly not lost on the enslaved laborers working and living at the estate. Their quarters, too, were finely made, but not for their comfort. These quarters were the flanker buildings and the basement of the mansion house, finely made to reflect the wealth, influence, and education of the Drayton family. Furthermore, these quarters were not built solely as quarters; they served the Drayton family and Drayton Hall first and foremost and housed enslaved laborers only as a secondary function. In contrast, the finely-made stable, which the enslaved Africans and African Americans working in and near the mansion house would encounter nearly every day, was purpose-built for housing horses, thereby serving as a visual reminder to the enslaved community that they were viewed as no better than livestock. Simultaneously impressive to white eyes and oppressive to black eyes, the stable was a constant physical reminder to the enslaved population of their subordinate position and subhuman status.

Similarly, Mount Vernon's enslaved community likely looked upon the stable there with contempt. Compared to the living conditions of the enslaved workers, the brick stables at Mount Vernon's Mansion House Farm were grand. Enslaved workers who lived at the Mansion House Farm in the 1790s and likely encountered the stable on a regular basis lived largely in dormitory style housing in the wings of the Greenhouse. At least 20 slaves of the same sex were housed in each 70 x 20 foot wing of the Greenhouse quarter, leaving little privacy. Prior to that, enslaved families lived in the deteriorating wooden structure known as the House for Families (Knight 2010:29-30).

There is an interesting synchronicity between the stables and the quarters for the enslaved workers of Mount Vernon's Mansion House Farm. Before the 1790s, both working animals and enslaved laborers lived in wooden structures. After the stable was rebuilt and the House for Families was demolished, riding and carriage horses and mules and enslaved laborers now found themselves living in brick structures that were tied into Washington's view of what the overall landscape of the plantation should be. Whereas the equines of the Mansion House farm now had more stately quarters inside and out, Washington's enslaved domestic workers now lived in an externally-beautiful, but internally-cramped and dehumanizing space separated from their spouses and families.

It is likely that some enslaved individuals rarely came into contact with the stables of Mount Vernon and Drayton Hall. Despite this, they were still embroiled in landscapes of domination. Mount Vernon, like many Chesapeake plantations, was home to a main home farm and outlying quarters. At Mount Vernon, George Washington gave each of his outlying quarter farms its own name: Dogue Run, Union Farm (formerly Frenches and Ferry Farms), Muddy Hole Farm, and River Farm (Figure 53). Each of these

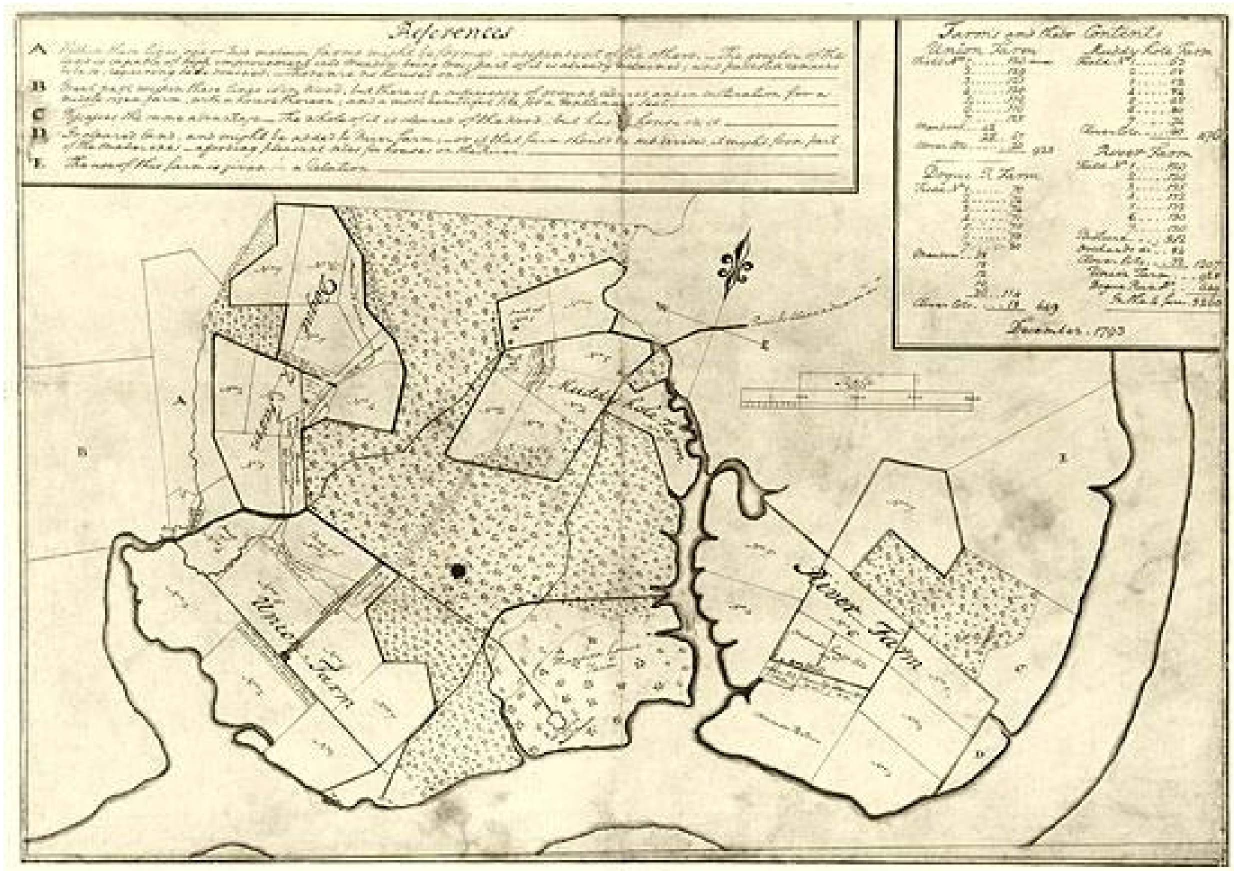


Figure 53. Washington's drawing of Mount Vernon, with its outlying farms labeled.
(Courtesy of Mount Vernon Ladies' Association)

outlying farms was essentially its own small plantation which served the Mansion House Farm and the larger plantation estate as a whole. At each, working animals, non-working animals, enslaved laborers, and overseers interacted on a daily basis as each quarter had its own meadows, shelters for cattle and horses, hog pens, corn cribs, and "covering for forty odd negroes" ([MVDA], Farm Combine Document, Farm Reports, 1789-1798; [PGWDE] 1793d). On these quarters, enslaved laborers were expected to build their own houses, which were often small log cabins built for one or two families with approximately 14 by 16 feet of living space for each family (Knight 2010). Working horses and oxen on the outlying quarters resided in sheds of varying qualities, but in 1793, at least, Muddy Hole farm had a "tolerable good barn, with stables for the work horses" ([PGWDE] 1793d). These sheds, barns, and stables, too, were built by hand by Washington's enslaved workforce and had to be up to his, his farm managers', and his overseers' standards. In the plans Washington made for his outlying farms shortly before his death in 1799, he dictated, "The work horses and Mules are always to be in their Stalls - & well littered & cleaned when they are out of Harness" ([PGWDE] 1799). Oxen, too, were to be housed in stalls specifically designed for them. Washington saw to it that the working animals on the outlying farms were well-sheltered but neglected to provide his enslaved workers on these exact same farms with little more than the barest of essentials. Although Washington's working livestock and his enslaved laborers were both viewed as property, his working livestock could not provide themselves with the barns and supplemental feed which were now essential to successful livestock husbandry in the Upper Chesapeake. And if you had to build barns to succeed as a Chesapeake planter, you might as well build barns that attested to your success as a Chesapeake planter.

At Drayton Hall, too, enslaved field laborers likely lived close to the fields in which they worked. A circa 1790 map of the entire estate depicts a small offset square amongst the fields and woods of the estate (Figure 54). The fact that this area was not disturbed during the widespread phosphate mining of the estate in the second half of the nineteenth century and its proximity to the estate's African American cemetery suggests that this square may have been the location of the settlement which housed enslaved field laborers (Carter Hudgins, personal communication 2016).

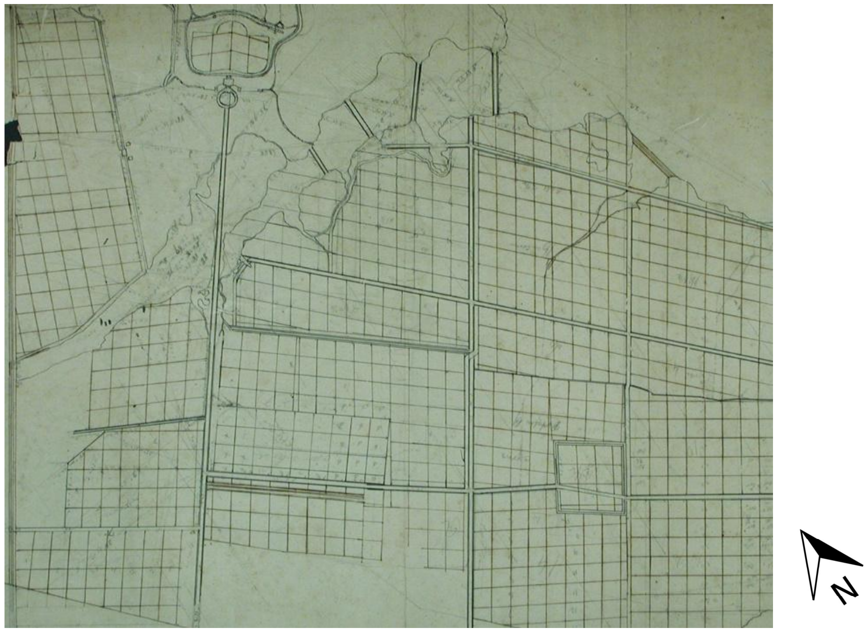


Figure 54. The circa 1790 map of Drayton Hall, showing the mansion house near the upper left corner and the possible slave settlement as an offset square near the lower right. (From the "Drayton Papers Collection" courtesy of Drayton Hall, a National Trust historic site)

If this square area was indeed the location of the quarters for enslaved field workers, it may have been laid out very similarly to the quarters depicted on the back of Charles Drayton's sketch map (Figure 55). Here, the house yards and gardens for the Draytons' enslaved workforce are visible in addition to spaces designated for hogs and sheep close to the driver's residence. The driver, likely an enslaved individual himself, oversaw the operations of daily life in the field quarters, gazing out over the pasture and onto the laborers' yards. This sketch is telling of the planter's perspective of the outlying field quarters. Areas for hogs and sheep are clearly delineated, as are the spaces for the gardens and yards of the enslaved workforce. However, the actual dwellings of the enslaved laborers are notably absent, suggesting that, similar to Mount Vernon, enslaved individuals were responsible for constructing their own houses. In the planter's eyes,

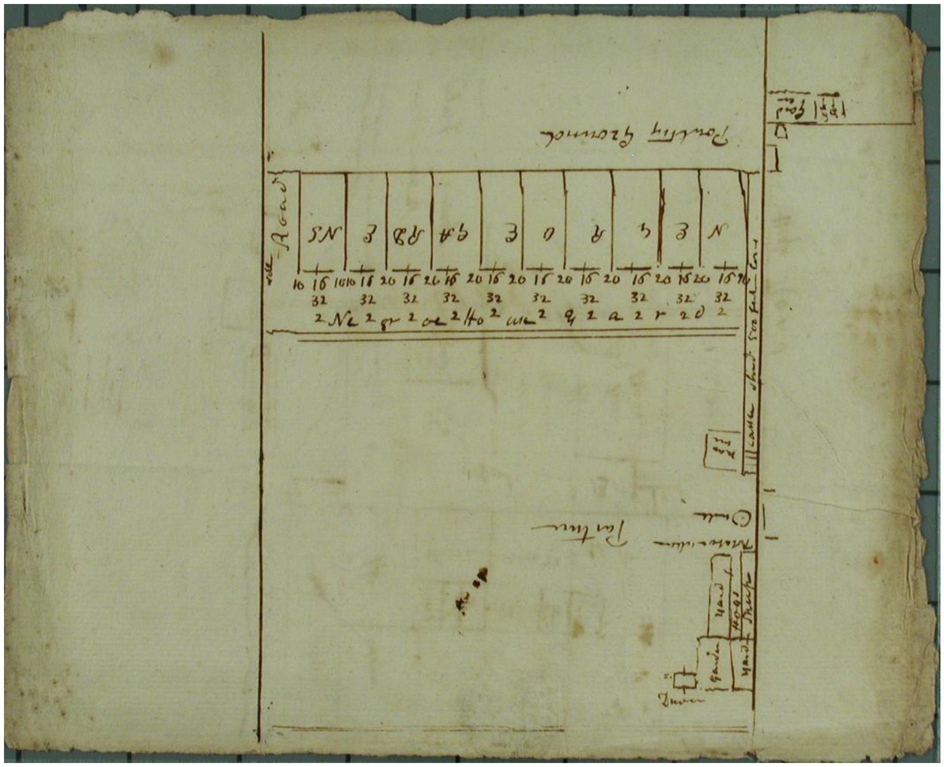


Figure 55. The sketch of a slave settlement, showing the driver's house in the lower right and the slave gardens along the top, which was found on the back of Charles Drayton's 1790s sketch of Drayton Hall. (From the "Dayton Papers Collection" courtesy of Drayton Hall, a National Trust historic site)

the outlying quarters were of little concern, as long as his stock of animals was cared for, provisions were properly rationed, and the laborers completed their tasks. Such was common on Lowcountry plantations, where the outlying quarters fostered a vibrant enslaved community with little direct supervision or scrutiny from the planter. Although still bound human property, enslaved field workers in these conditions were not continuously reminded of their subhuman status, whether through regular interactions with white individuals or by viewing the elaborate stables built for horses juxtaposed against the crowded corner rooms and attics in which they lived. These buildings were not the only physical manifestations of the social landscape, however. Animals and their labors were also physical reminders of the extreme status differentials present on Chesapeake and Lowcountry plantations.

Animals in the Animal Landscape

Animals, their placement on the landscape, and their labors also contributed to the physicality of the social landscape of eighteenth-century plantations. Here again, planters strategically placed working animals on the landscape or used their labors in strategic ways to create the ideal plantation landscape.

As the eighteenth century progressed, draught animals became more numerous in the Chesapeake. The preceding analyses of probate inventories and faunal remains reveal that nearly every eighteenth-century Upper Chesapeake plantation had horses and that, from the 1750s on, over half of Upper Chesapeake plantations had oxen. The presence of numerous draught animals on a plantation signaled that the planter had switched from hoe-based tobacco production to large-scale plow-dependent mixed grain production. This switch to mixed grain production, in turn, signaled that the planter was reading the latest British literature on animal husbandry and efficient agricultural practices, evidencing the planter's education and familiarity with the latest trends. As Walsh (2010:628) writes, "Initially, this new cult of improvement served more to reinforce the prestige of the great planters through their privileged access to transatlantic intellectual and cultural networks and interaction with European learned societies than it did to advance husbandry in the region." As mixed grain production was also more lucrative than tobacco production in the mid- to late-eighteenth century, the presence of numerous draught animals also meant that the wealth of the planter was likely increasing. Thus, animal labor was an indirect measure of a planter's wealth and influence.

At Mount Vernon, working animals played a very important role in the establishment and maintenance of Washington's wealth and were afforded prominent placement on the plantation landscape. At the Mansion House Farm, cattle, mules, and horses were a regular sight close to the mansion. Visiting Mount Vernon in the late 1780s, poet David Humphreys wrote ,"[O]n the opposite side of a little creek to the Northward, an extensive plain, exhibiting cornfields & cattle grazing, affords in summer a luxurus [sic] landscape to the eye" (quoted in Manca 2012:84-85). Even though not working, the presence of grazing cattle in a serene setting was a callback to the country estates of England. Cultural borrowing was a sign of social prestige in the eighteenth-century Chesapeake, and innovative planters sought to transform their Chesapeake plantations into agricultural holdings which closely resembled those in Europe.

Working equines, especially mules, also were afforded a prominent position at Mount Vernon's Mansion House Farm. Mules and Washington's most prized horses resided in the paddocks which one encountered on his or her approach to the stables (Figure 52). Although mules were not exceptionally popular in the South during Washington's lifetime, they were one of his pet projects and exemplified Washington's agricultural innovation to visitors of the estate. Washington was keen on efficiency in agriculture; by combining the efficiency of oxen with the speed and versatility of horses, mules were Washington's ultimate working animal, and he promoted them as such. By breeding his own mules at Mount Vernon, Washington also implicitly flaunted his wealth and influence. Washington's political connections allowed him to obtain the highest quality of jackstock from Spain and Malta ([PGWDE] 1784, 1786c). Even obtaining relatively poor quality asses in the eighteenth century was expensive, meaning that producing mules was a prohibitively expensive endeavor. As sterile hybrids, mules are not able to reproduce their population, so equine and asinine breeding stock always had to be on hand. Therefore mule breeders required a great deal of land and feedstuffs to keep their breeding stock productive, both of which Washington had.

Washington's efforts in mule production also could be seen on the roadways around Mount Vernon and Alexandria. In 1788, Washington wrote to Arthur Young that he intended "to drive no other" than mules in his carriage and that he had bred twenty of his best mares to his jackass to produce carriage mules ([PGWDE] 1788). It took ten years, however, before Washington had a team of four mules to pull his carriage at the Mansion House Farm ([MVDA], Farm Combine Document, Farm Reports, 1798). In doing so, though, Washington could take the animal landscape of Mount Vernon literally on the road with him, proclaiming his financial ability to operate a successful mule-breeding program and his acumen in agricultural efficiency wherever he went in his mule-drawn carriage, thereby creating a mobile human-animal meeting point (Oma 2013).

In the eighteenth-century Lowcountry, working animals were not as directly tied to wealth as they were in the Chesapeake. However, their placement on the landscape could subtly signal the planters' social standing. Charles Drayton's sketch map of Drayton Hall demarcates a calf pasture of approximately seven acres on the right hand side of the road leading up to the mansion house (Figure 51). Cattle were a regular fixture on the landscape of Drayton Hall, with 75 total bulls, cows, oxen, steers, and calves recorded at the estate in August 1798 ([DH], The Drayton Journals, Plantation Journals). These cattle, like many of the livestock and crops raised at Drayton Hall and the other Drayton family holdings, represented a larger landscape of land-holding and familial wealth. Although visitors to the estate might not have been privy to the information and certainly could not tell simply by viewing the cattle as they approached the main house, these cattle and other livestock were regularly moved between the various Drayton family holdings in the last decades of the eighteenth century ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820). By placing the calf pasture of Drayton Hall in such a prominent location, Charles Drayton invited conversation about his vast landholdings and wealth brought on by simple comments from visitors about the cattle they passed as they approached the mansion house from the land side of the estate.

It was not simply the presence of animals that implied planters' wealth and status in the Chesapeake and Lowcountry, however. The ways in which working animals were employed told perhaps more of the planters' wealth and social standing. Because of their relatively inefficient digestive systems, equines are traditionally more expensive to maintain than cattle. Ellenberg (2007:17) calculates that raising a steer to working age costs about one-third as much as caring for a horse or a mule for that time. In the mid- to late-eighteenth-century Upper Chesapeake, horses were favored over oxen for plowing. This preference was likely twofold. First, horses are quicker than oxen and can work longer days, enabling them to complete the increased plowing that accompanied grain production in a shorter time (Barwell and Ayre 1982:5). Secondly, as a more expensive animal to maintain and one which is more prone to injury than oxen, horses as plow animals served as a form of conspicuous consumption. Having horses perform difficult labor such as plowing indicated that the planter had enough wealth to support these animals even though an ox could do the same work at a fraction of the cost.

The non-agricultural labors of horses also signaled the planters' wealth and status in the eighteenth-century Chesapeake and Lowcountry. In both regions, horses served important roles in personal transportation. This dissertation's analysis of probate inventories reveals that on eighteenth-century Chesapeake plantations, coach horses gradually increased in popularity while chair horses decreased, suggesting an overall shift from individual to group transportation. This shift suggests more conscious costly signaling on behalf of the planter as coaches were linked with persons of wealth or high rank in the eighteenth century (Berkebile 1978:97). Additionally, high-quality coaches and well-conditioned coach horses publicly proclaimed the planter's ability to replicate the English gentry's lifestyle (Brown 1996:275). More telling are those Chesapeake planters whose coach horses pulled chariots, which held multiple individuals and a detached driver, making them "symbols of rank or wealth" (Berkebile 1978:84-85). In 1768, George Washington ordered himself a chariot from the London Chariotmaker Christopher Reeves, requesting it to be "made of the best Materials," with carved wood, green Moroccan leather trimmed with lace, and plate glass ([PGWDE] 1786e), a true symbol of his rank and wealth coming shortly after his switch to wheat production at Mount Vernon. Later in the eighteenth century, Washington's use of mules to pull his carriage also indicated his wealth and agricultural innovation.

In the Lowcountry, too, horses afforded the planter class a means to travel and to showcase their standing. Unlike in the Chesapeake, chair horses in the Lowcountry maintained their popularity throughout the century. Charles Drayton occasionally rode to Charleston in the 1790s in a phaeton, a four-wheeled riding chair capable of carrying two passengers, especially when travelling with members of his family. However, Drayton's preferred method of transit between Drayton Hall and Charleston was a riding chair, accompanied by an attendant on horseback ([DH], The Drayton Journals, Plantation Journals, 1784, 1785, 1789-1820). Thus, while Drayton could have ridden in a coach or other vehicle driven by a coachman, he preferred to drive himself in a chair while his attendant followed on horseback. The presence of the attendant signaled that Charles Drayton was a wealthy man. However, through Drayton's driving of himself in a chair, he showed that he was actively engaged in his own affairs. Rather than passively sitting in the back of the coach, he was making the trips for himself and seeing to the affairs of his multiple landholdings and the products produced thereon as they arrived on sloops in Charleston. Other Lowcountry planters likely followed a similar logic, driving themselves in riding chairs rather than sitting in carriages driven by enslaved coachmen to give an air of active engagement in their own affairs during a time rife with the absentee ownership of plantations and increasing reliance on enslaved drivers to run the day-to-day operations of the plantation (e.g., Weir 1983:180).

In creating their ideal plantation landscape, planters created physical expressions of the ideological eighteenth-century social landscape. Planters used buildings, fences, and animals to demonstrate their wealth and knowledge and to create physical distinctions between areas for the elites and areas for the enslaved. These animal landscapes of domination were so engrained into everyday life that they sometimes were codified into laws and were an inescapable element of daily practice.

Normalizing the Animal Landscape of Domination: Legal and Social Regulations

The social landscapes of eighteenth-century plantations were not isolated on the individual estates. Rather, they were part of the larger ideology of social order in the Colonial South. Under this ideology, codified laws and non-codified cultural customs regulated the interactions that could occur between humans and animals. Through these regulations, the animal landscape of domination became a normalized part of everyday life in the Chesapeake and Lowcountry.

Anglo-American colonists enacted and enforced the laws and customs in each colony. Drawing from their English heritage, colonists viewed domestic livestock as a symbol of civilization (i.e., Anderson 2004). It should come as no surprise, then, that in the Chesapeake and Lowcountry, laws and social regulations limited enslaved Africans' and African Americans' access to and associations with domestic livestock, owing to the "uncivility" of the slaves. South Carolina's 1712 slave law forbade enslaved individuals from "killing or stealing any neat or other cattle, maiming one another, stealing of fowls, provisions, or such like trespasses or injuries." Crimes against these laws were punished according to common law, meaning that "the sentence will be imposed as the crime by law deserveth" (Higginbotham 1980:181). While the law itself seems straightforward and applicable to all residents of the colony—no one should steal what is not theirs or hurt anybody else—the enforcement of the law and the punishment of the culprit were open to interpretation. Being punished according to common law, enslaved individuals were subject to much more severe punishments, such as brandings or dismemberments, than were white individuals convicted of similar crimes.

In antebellum South Carolina, an enslaved man was killed while attempting to thwart the theft of the planter's oxen (Hindus 1976:580). Perhaps this enslaved individual had a close working relationship with these oxen and was, essentially, protecting his own identity, pride, and working partner as either a responsible stock-keeper or a drover. However, it is also just as likely that this individual was protecting the oxen for fear of being blamed and punished by the planter for letting his oxen escape or of being accused of stealing the oxen himself. Out of fear for being punished for an act he did not commit, the enslaved man paid the ultimate price.

In 1722, the South Carolina legislature debated over whether or not slaves could possess horses and cattle. Nearly all enslaved plantation workers raised their own poultry and hogs (Pargas 2010:99). However, enslaved ownership of horses and cattle was more threatening to the social order, as these larger animals allowed enslaved individuals to travel, thus potentially furthering insurrectionary plots. Legislators ultimately decided that justices of the peace, rather than individual masters, had the authority to take and sell these contraband animals. The "rightful" owner of the animals could retrieve them if he or "another white person swore that the animal belonged to him" (Higginbotham 1980:173). Thus, white individuals could lawfully take horses and cattle from enslaved black individuals. Injustice pertaining to animal ownership was now institutionalized, rather than negotiated in individual circumstances.

A second means of interrupting slaves' claims to livestock in the Lowcountry were laws pertaining to stock marks. With the common practice of free-range husbandry in the eighteenth-century Lowcountry, all livestock owners relied on stock marks to prove their ownership. However, slaves could not brand their livestock, even their lawfully-owned hogs, without a white individual present (Gray 1933:145). Enslaved individuals might therefore be coerced under threat of physical punishment into placing the planter's or someone else's brand on the hogs rather than their own. In instances such as these, the heavy penalties for changing brands likely prevented enslaved families from ever changing the marks to their own, essentially being forced to hand over their personal property to whites.

Laws in the Chesapeake, too, both indirectly and directly forbade enslaved individuals from owning livestock. In 1682, the Maryland upper house declared that even freed Africans could only own productive horses (i.e., stallions and mares) if they also owned a minimum of fifty acres of land. Those freedmen who did not own land could only own a single horse, and it had to be a gelding (Gray 1933:203). Here again, the English colonists used their views of being civilized to deny free individuals the open right to breed horses for fear of freedmen's stock degrading the overall equine population in the new colony.

With the increasing enslaved population in the late-seventeenth-century Chesapeake, Virginia lawmakers further separated blacks from whites. Virginia's eighteenth-century slave laws were some of the harshest the colony had seen and ever would see, with nineteenth-century Virginia laws actually having more lenient enforcement and punishment (Phillips 1915:338). Virginia's 1705 statute prohibited slaves from owning any cattle. Any slave-owned cattle could be seized and sold, with the profits going to aid the colony's poor white population (Higginbotham 1980:56). These laws reflect white lawmakers' wishes to further relegate enslaved individuals to subhuman status. As property themselves, enslaved individuals were denied the right to own certain forms of property. Without any of their own livestock, enslaved individuals were explicitly denied the ability to move freely or to grow crops with anything more than hand tools and manual labor.

The importance of livestock in the social world of the Chesapeake and Lowcountry also can be seen in legislature pertaining to the theft of these animals by free white individuals. In colonial Virginia, stealing of sheep or cattle was not a capital offense but horse-stealing was (Scott 1930:221-225). Horses were seen as more valuable, both economically and socially. Horses were more expensive to purchase and maintain than sheep or cattle (Budiansky 1997:15, 29, 31; Langdon 1986:159-160), providing their owners with social prestige in addition to transportation and labor. Because of horses' higher social capital, their theft was punishable by death or the loss of a member.

The social importance of horses is also evident in the regulation of which plantation residents were allowed to interact with these animals and in what ways. Billy Lee was George Washington's enslaved manservant and accompanied Washington nearly everywhere, including on fox hunts. Both Lee and Washington were described as accomplished horsemen; however, when riding together, Lee could only ride beside or behind Washington, never in front as that was not befitting his station as an enslaved man (Hirschfeld 1997:98-108).

In her analysis of gender and race in colonial Virginia, Kathleen Brown notes that the use of coaches, too, was a racialized activity in the Chesapeake. Brown (1996:274) writes, "By the early eighteenth century, most elite planters distinguished themselves on the colony's dusty and poorly kept roads with fine horses and coaches that were used exclusively for the transportation of the white family and its guests." The prohibition of enslaved individuals from traveling in coaches and carriages also extended to the eighteenth-century Lowcountry.

In May 1799, Thomas Drayton, the brother of Charles Drayton, moved his family and their enslaved domestics from Ocean Plantation to Drayton Hall. Thomas and his wife, Mary, and their youngest daughter, Sally, travelled in a coach, an indication of the family's wealth and rank (Berkebile 1978:97). The Drayton's tutor, John Davis, and the other daughter, Maria, followed in a riding chair while fourteen-year-old William Henry rode on horseback. Next in the procession were "half a dozen negro fellows, indifferently mounted, but wearing the laced livery of an opulent master" (John Davis in Jones 1957:85). Enslaved individuals were not allowed to ride in a coach or on a riding chair, but they were allowed to ride horse, as opposed to walking, behind the members of the Drayton family. The stylish clothing and horseback riding told more of Thomas Drayton's social standing than that of the enslaved individuals'; the rich clothing indicated Drayton's wealth to those who saw the procession and the riding indicated his need to efficiently travel from one family landholding to the next.

It is hard to fathom today, but in some instances planters favored the lives and well-being of horses over that of their enslaved workers. Such could be interpreted by the opulent stables on Chesapeake and Lowcountry plantations juxtaposed against the crowded and hidden quarters for enslaved workers. In an even more poignant example, Lewis Hayden, a former antebellum slave in Kentucky, recounted the time his master sold his brothers and sisters at an auction. Hayden recalled, "I stood by and saw them sold. When I was just going upon the block, [my master] swapped me off for a pair of carriage-horses. I looked at those horses with strange feelings… How I looked at those horses, and walked around them, and thought for them I was sold" (quoted in Blassingame 1976: 140-141).

In death, too, working animals were part and parcel of the normalized inequality present on eighteenth-century plantations. Although planters provided their enslaved workforce with cuts of meat as part of their rations, these cuts were not always the same cuts which were being consumed at the big house. Unfortunately, the zooarchaeological record was unable to reveal patterns of preferential distributions of meat from slaughtered working oxen because of the small sample size of the only assemblage which undeniably represented the food wastes from enslaved individuals: Mount Vernon's "House for Families" (Atkins 1994). However, the documentary record of Mount Vernon hints at the preferential distribution of oxen meat to the enslaved workforce. Oxen, being older than most cattle which were raised for beef and having labored for a large portion of their lives, generally provided less tender meat than their non-working counterparts. At Mount Vernon, there is no record of George Washington or any other elite residents of the estate consuming the meat from old oxen. Rather, old oxen were sometimes sold to the butcher in Alexandria ([MVDA], Farm Combine Document, Farm Reports, 1791) and sometimes became part of the rations of the enslaved. On December 5, 1795, an old ox at Mount Vernon's River Farm was killed "and salted up for the people" ([MVDA], Farm Combine

Document, Farm Reports, 1795). Washington's enslaved laborers were not limited to consuming beef only from old, tough oxen, though, as they were given rations of salted beef from young steers, too. However, the lack of consumption of oxen meat at the mansion house does suggest the hierarchy of plantation residents affecting and being affected by working animals in life as well as in death.

Despite the oppressive laws, customs, and social regulations of the eighteenth century, not all animal landscapes upheld the rigid social hierarchy seen on colonial plantations. As shall be discussed in the following section, enslaved individuals and those in subordinate positions created animal landscapes of resistance which undermined the structures of power that permeated the day.

Animal Landscapes of Resistance

As seen throughout this chapter, planters created landscapes of domination based on their ideologies regarding the social order. In creating and enforcing this social order, working animals symbolized the wealth and power of the planter, and an enslaved laborer's interactions with working animals contributed to that individual's standing within the plantation hierarchy. However, planters were not the only plantation residents who used their associations with working animals in negotiations of power.

At times, enslaved individuals passively created an animal landscape of resistance. Enslaved plowers, carters, and drovers commonly named the animals with which they were working. These names were then taken up by the planters and overseers who also addressed the animals in this way, thus creating a lasting memory of the enslaved person on a landscape in which his or her individual presence was overlooked. In 1799, John Davis noted that in South Carolina, the world "old" preceded the names of many of the horses on the plantations. Davis wrote, "This does not signify that they were naturally old, but it was simply a designation given to them by the slaves, and the white folks accepted it and so styled the horses also" (in Jones 1957:220). Two Lowcountry probate inventories record this naming trend: Old Duke, a cart horse in Capt. Nicholas Harleston's 1768 inventory, and Old Sorrel in James McLaughling's 1774 inventory (Fold3 by Ancestry 2016, Inventories of Estates, 1736-1774, Volume X:333-336, Volume Z:500-504). John Davis (in Jones 1957:220) also noted that Lowcountry slaves also gave nicknames to each other and even to the white folks, "But the white folks seldom caught on to the nicknames given to them."

Working with animals also granted enslaved laborers a relative amount of power on the plantation. In both the Chesapeake and the Lowcountry, all work areas other than the main house were considered the territory of the enslaved community. These work areas encompassed the actual labor an enslaved man or woman was performing. When Philip Fithian, the owner of Tuckahoe plantation in Virginia, touched the plowlines of Natt the plowman, he was "obliged to pay a forfeit" for infringing on Natt's domain (Upton 1984:70).

Plowers, carters, and drovers fully understood that their work was their domain and used this to their advantage. In both the Chesapeake and the Lowcountry, animal-drawn equipment was utilized during certain stages of the agricultural cycles. Enslaved drovers, carters, and plowers were exceptionally adept at using their lines and goad sticks to establish the pace of work completed by the horses, mules, and oxen (Russo and Russo 2012:175-176). In the Lowcountry, where the task system prevailed, enslaved drovers would push the oxen to clear the fields quickly so they could have more free time to themselves after finishing their task. In the Chesapeake, however, the gang system of labor meant that enslaved individuals worked from sunup to sundown no matter what. Therefore, plowers and carters in this region likely kept their traction animals working at a very leisurely pace. This ability to avoid labor while appearing to work hard was one such skill which afforded individuals a relatively high status in the enslaved community but was lambasted by the planter class (Blassingame 1976:147).

Dawdling could even be done before the carting or plowing had begun. In 1793, George Washington wrote to his farm manager, “Just before I left home I discovered that the Carters & Waggoner, in order to get their horses easily of mornings, turned them into the Clover lot by the quarter. forbid this absolutely. They have injured it considerably already, by eating it so bear [sic] as for the frosts to kill the roots, but will ruin it entirely if they are suffered to continue this practice any longer” ([PGWDE] 1793c). Even though Washington was absent from the estate, enslaved carters and wagoners were expected to bend to his will, at least superficially. By being forced to keep their horses in a less convenient paddock, the carters and wagoner could now feign difficulty in catching their horses each day or take more leisurely strolls to the paddocks, thus slowing the operation of the plantation.

The historical record of Mount Vernon reveals other remarkable examples of enslaved individuals conducting themselves in routinized, non-revolutionary ways

(Silliman 2001) to create animal landscapes of resistance on the plantation. Peter, an enslaved groom at the Mansion House Farm of Mount Vernon, took advantage of his master by riding Washington's horses for his own pleasure and amusement. In writing to the farm manager Anthony Whiting in 1792, Washington remarked, "I have long suspected that Peter, under the pretence [sic] of riding about the Plantations to look after the Mares, Mules, &ca:, is in pursuit of other objects; either of traffic or amusement, more advancive of his own pleasures than my benefit" ([PGWDE] 1792).

Carters and wagoners, too, were able to use their connections with these objects and the working animals which pulled them to undermine the structures of domination present at Mount Vernon. In 1793, George Washington wrote to his new farm manager William Pearce:

> There is nothing which stands in greater need of regulation than the Waggons & Carts at the Mansion House which always whilst I was at home appeared to me to be most wretchedly employed—first in never carrying half a load; 2dly in flying from one thing to another; and thirdly in no person seeming to know what they really did; and oftentimes under pretence of doing this, that, and the other thing, did nothing at all; or what was tantamount to it. that is— instead of bringing in, or carrying to any place, full loads, and so many of them in a day; the Waggon, or a Cart, under pretence of drawing wood, or carrying Staves to the Mill wd go the places from whence they were to be taken, and go to sleep perhaps; and return with not more than half a load. Frequently have I seen a Cart go from the Mansion house, or from the river side to the new Barn with little or no more lime or sand in

> it, than a man would carry on his back— the consequence of this was that the Brick layers were half their time idle; for it required no more time to make the trip with a full load than it did with half a load—of course, double the qty would be transported under good regulation [[PGWDE] 1793e]

In addition to hauling less than Washington expected of them, some enslaved carters simply did not haul anything when they were performing their duties. The March 17, 1798 Farm Report records "3 mule cart … to Alexria for Peach trees 1 day & did not get them" ([MVDA], Farm Combine Document, Farm Reports, 1798). Whether it was of their own doing or because of matters out of their hands, Washington's enslaved carters were able to enjoy some relative freedom away from the plantation and to undermine the overseers and managers by returning to the estate empty handed.

Other animal landscapes of resistance were less benign than those which involved lollygagging during plowing or hauling only half-full loads in carts. Some animal landscapes of resistance involved active revolt in the form of running away. Part of the prestige that the enslaved community placed on those who worked with animals was that, as a carter, wagoner, or plower, a slave was outside of direct white supervision, even if for a short period of time. Newspaper notices from South Carolina and Virginia indicate that many runaways left from wagons, boats, while hired out, or when any other opportunities for mobility presented themselves (Windley 1995). In the Lowcountry, especially, horseback riding was seen as a means to escape the bonds of slavery from the numerous cowpens that dotted the landscape in the eighteenth century. The cowpen keepers were often white, but the cattle hunters were enslaved Africans. As Dunbar

(1961:130) wryly quips, “As the [cattle hunters] were mounted and became highly skilled in horsemanship, the owner often lost both slave and horse at once.”

Using working cattle and equines or even associations with these working animals—as in the case of a hired out wagoner—to assist in running away, enslaved laborers were acting in Bourdieu’s (1977) traditional sense of the term “agent.” These individuals were truly revolutionaries actively working against the structures of inequality on eighteenth-century plantations.

Other forms of active revolution in the animal landscape involved theft or the destruction of property. In 1798, Charles Drayton wrote in his diary that his “fattest ploughing ox” had been missing four days, and he feared that the driver’s wife had stolen, slaughtered, and smoked the animal as she was observed “removing from her house…2 pie-ces of fresh beef smoaked” ([DH], The Drayton Journals, Plantation Journals, January 18, 1798). Four years earlier, Drayton had recorded in his diary “Last night the Coach house & Stables of my brother Thomas was destroyed by fire. Little doubt but that it was done by old Jamie who is crazy - and vengeful.” ([DH], The Drayton Journals, Plantation Journals, August 25, 1794). Perhaps the disparities between housing for the working animals and housing for enslaved workers at Thomas Drayton’s plantation had become too much for Jamie, who actively revolted against that animal landscape of domination and created a new animal landscape of resistance.

Conclusions

All eighteenth-century plantation residents were components of the animal landscape. Similarly, all human residents were able to use their associations with working animals in the creation of an animal landscape which fit their immediate purposes. In the case of the planter class, this animal landscape was largely one of domination, with working horses, oxen, and mules serving as indicators of the planter's wealth or status and enslaved workers continually being reminded of their low position in the social order. Enslaved individuals, though, could use their skills working with animals to earn money, hinder the efficiency of the plantation, or to run away, all forms of resistance in the animal landscape.

Between the Chesapeake and the Lowcountry, these animal landscapes of domination and resistance took slightly different forms, likely owing to the differences between labor systems and slave societies in the two regions. In the Chesapeake, working animals were integral to the production of mixed grains and, therefore, to the accumulation of wealth. Planters flaunted these working animals as a means to signal their wealth and agricultural success. Enslaved laborers, on the other hand, worked with oxen, horses, and mules, to purposely slow the progression of work, as they were bound by the gang system of labor, working from sunup to sundown no matter what. In the Chesapeake, the social landscape, both from the perspective of the planter and from the perspective of the enslaved, was tightly associated with the animal landscape.

In the Lowcountry, animals were certainly present and working on eighteenth-century plantations, but they were not as vital to the plantation's overall success as they were further north in the Chesapeake. Planters again could use working and non-working animals to signal wealth and prestige, but they were not as directly tied to the actual accumulation of wealth as they were in the Chesapeake. Furthermore, the slave societies of the Lowcountry were much more autonomous than those in the Chesapeake, as they labored in the task system and had less direct white supervision (e.g. Edelson 2006:115; Morgan 1998). Under the task system, it was in an enslaved individual's best interest to complete the task as quickly as possible, so plowers or drovers worked quickly with horses and oxen to maximize the amount of time they would have after the completion of the task. With a more autonomous slave society in the Lowcountry and less time spent actually working with working animals, slaves in the Lowcountry likely saw less need and less opportunity to incorporate animals into their daily landscapes of resistance than did the slaves who labored in the Chesapeake.

Despite the subtle differences, both regions experienced animal landscapes of domination and resistance. Sometimes the domination was explicit, such as a planter trading an enslaved man for two carriage horses, showing the man that the planter did not value his life any more than that of two horses. Sometimes the domination was more indirect, with planters building well-constructed stables for horses but making the enslaved workforce build their own earthfast dwellings. Similarly, the enslaved workforce of plantations engaged in both passive and active resistance in the animal landscape, from slow work when plowing to running away on horseback while rounding up livestock. In all of these, it is clear that animals were more than just static figures on the plantation landscape; they were integral to how all plantation residents viewed themselves and everybody else around them.

Chapter 9. Going Beyond the Butcher's Block

A white, yeoman farmer walks along a dusty colonial Virginia road on his way into town to barter for a new hoe. Along the way, he is passed by an enslaved black man riding on a horse, also going into town to pick up goods at the market for his master. Although one is free and the other enslaved, at that particular moment in time, the social hierarchy of the eighteenth-century Chesapeake is unclear. The horse literally and symbolically elevates its enslaved rider and, at that moment, the enslaved man is able to look down on a white man without repercussions. In addition to raising up the enslaved man, the horse represses the white man. Far more than simply a vehicle, the horse represents an additional member of the plantation workforce, a worker which the yeoman farmer might not be able to afford let alone allow someone else to ride into town.

Animals were integral in shaping the physical and social landscapes of eighteenth-century plantations. By focusing on working oxen and equines, this dissertation ascertained how domestic livestock simultaneously contributed to the economic and to the social spheres of human life. As working animals, oxen and equines were essential to grain production in the eighteenth-century Chesapeake and were essential for transportation in the eighteenth-century Lowcountry, thereby contributing to the economic success of plantations in both regions. Furthermore, working animals—through their close proximity to activity areas, planters' purposeful use of them as symbols of agricultural prowess, and their ongoing working relationships with carters, drovers, and plowers—interacted with humans on a different level than did those animals kept solely for meat (e.g., Oma 2013). These daily interactions with people of all classes, races, and sexes positioned working animals also to be incorporated readily into the social spheres of humans as powerful symbols and as means of establishing and undermining power differentials. Put simply, draft animals framed the existence of the colonial English planter by providing basic necessities for daily life and important social capital.

To explore these multifaceted interactions between humans and working animals and the contributions which both parties made to everyday life on eighteenth-century plantations, this dissertation employed an animal landscape approach. Landscapes are comprised of natural and cultural elements, just as the interactions between humans and animals are predicated on thousands of years of natural and cultural processes. Drawing from the natural processes of co-evolution (Budiansky 1992; O'Connor 1997), humans and working animals are able to establish successful systems of husbandry and agricultural production, as was done on eighteenth-century plantations, because the needs and wants of both parties are taken into account and balanced against each other. Through cultural processes, animals are integrated into the economic, religious, and social spheres of human society (Arbuckle and McCarty 2014a) and thereby serve as "objects or vehicles of relations between human individuals and households" (Russell 2002:291). As such, the animal landscape approach draws from tenets of practice theory, understanding that both humans and animals can act as agents in their own ways and that through the interactions between humans and animals, power relations can be enacted in social life (Bourdieu and Wacquant 1992; Russell 2012; Silliman 2001). Within the habitus of daily interactions, all aspects of the human-animal relationship, whether husbandry-based or social, take place.

To study this integration of working animals into the social and economic realms of eighteenth-century plantations, this dissertation assessed faunal remains and historical documents, especially probate inventories, from plantations in the Upper Chesapeake and the Lowcountry. These faunal assemblages and probate inventories represent elite plantations in each region. As homes to wealthy planters, middling overseers, paid laborers, and enslaved Africans and African Americans, elite plantations provide ample opportunity to study human-animal interactions from multiple loci on the social spectrum.

The use of multiple lines of evidence is essential to approaching the intersection of human and animal lives from a landscape perspective (Branton 2009:53-54). Furthermore, the integration of archaeological and historical data allows each dataset to inform the interpretation of the other. No longer is archaeology the "handmaiden to history" (Hume 1964). Rather, both datasets can stand on equal footing and be compared and contrasted with one another for information related to the intertwining of human and animal lives. The documentary record provides this evidence through personal writings, maps, and detailed probate inventories, while the zooarchaeological record illuminates nuanced disposal patterns and allows for the inclusion of novel methodologies for identifying and interpreting working oxen and horses.

Oxen were identified in the zooarchaeological record using Bartosiewicz et al.'s (1997) methodology for identifying and scoring pathologies on the lower limb bones of cattle. This dissertation marks the first application of this methodology to faunal remains from the British North American colonies. It is hoped that this dissertation will stand as a model for future zooarchaeological studies that wish to ask deeper questions than simply "who ate what?" and will encourage zooarchaeologists to apply these novel methods to their own studies of animal husbandry and animal symbolism.

The zooarchaeological and the historical data revealed that working animals were important components of the eighteenth-century plantation landscape in both the Chesapeake and the Lowcountry. Zooarchaeological evidence indicated that working oxen were present on plantations in both regions but constituted a relatively low percentage of the total number of cattle. Probate evidence supported this finding and enabled a systematic study of working equines in both regions, as equine skeletal remains were remarkably rare in the plantation faunal assemblages. Additionally, the zooarchaeological record provided information on the age and sex distributions of livestock in both regions while the language used in recording entries in the probate inventories hinted at animal husbandry practices in the regions. The level of detail which went into each entry, including the listing of the ages of cattle and horses, served as a proxy for the level of human involvement in animal husbandry. The results of these faunal and documentary analyses revealed the nuanced differences in the animal landscapes between plantations in the Chesapeake and those in the Lowcountry.

In both regions, select cattle went through training to the yoke and then labored as draught oxen. In the Upper Chesapeake, the presence of oxen increased in conjunction with the rejection of tobacco production in favor of focused mixed grain production from the mid- to late-eighteenth-century. Before this switch, oxen were favored plow animals because they could more readily handle the rough soils and difficult terrain of abandoned tobacco fields than could horses, turning some of the most degraded tobacco fields into incipient wheat fields in the first half of the century. After the switch, however, oxen were predominately used to pull carts, likely hauling grains from the field to the barn and from the barn to the mills. All cattle, oxen included, were integral to grain production in the mid- to late-eighteenth-century Chesapeake, as they assisted in readying the fields, ate the stubble remaining in the fields after harvest, provided valuable manure to the fields, and ate the surplus grains which they helped to produce (Carr and Walsh 1988; Carson et al. 2008; Gray 1933; Walsh 2010). Probate records indicate that cattle throughout the Chesapeake were raised in a much more hands-on manner than those in the Lowcountry, likely attributable to their close integration with the grain cycles in the Chesapeake.

Osteological evidence from the cattle of South Carolina plantations reveals that, in the Lowcountry, oxen were less integrated into the major agricultural endeavor of the region—rice—than they were in the Chesapeake. Likewise, probate records indicate that fewer than half of eighteenth-century Lowcountry plantations were home to oxen. The oxen that were present in the Lowcountry, however, performed a variety of tasks. Their sturdy legs made oxen the preferred plow and wagon animal in the region, being able to navigate muddy fields and rough roads better than horses. Most oxen in the Lowcountry, however, likely pulled carts and assisted in lumbering to clear the fields. The lack of severely pathological cattle bones from a known rice plantation and the presence of severely pathological cattle bones in the assemblage from an estate that did not produce rice commercially suggests that the labors oxen provided on Lowcountry plantations were related to more nuanced characteristics of each individual plantation rather than to rice production as a whole, further explaining oxen's rather sporadic presence in the probate inventories. Furthermore, cattle, as a whole, in the Lowcountry were occasionally penned and fed, but ran free in the woods much more often than did those in the Chesapeake. With less supplemental feed to go around in the Lowcountry, planters who did have oxen kept relatively large herds but expected each ox to provide minimal labor in exchange for minimal additional feed; a sharp contrast to what was observed in the Chesapeake.

Similar to cattle, horses in each region lived and labored in slightly different ways. Horses in the eighteenth-century Chesapeake were penned whereas a small proportion of those in the Lowcountry were free-ranging in the woods. However, the working horses of the Lowcountry were highly cared for, as evidenced by the practice of including their names in the probate inventories. Probate inventories were vital to the study of working equines as only a handful of scattered horse remains were recovered from Lowcountry plantations, and none were recovered from the Upper Chesapeake plantations. Probates indicate that horses, but no mules, were present on a majority of eighteenth-century Lowcountry plantations. These horses primarily provided plantation residents with transportation rather than agricultural power. Horses were often listed as riding horses or chair horses, able to transport a Lowcountry planter between his multiple landholdings. When horses were used in agricultural production in the Lowcountry, they pulled carts, likely filled with rice, and powered the machines which cleaned and polished the rice grains.

In contrast, horses on eighteenth-century Chesapeake plantations were fundamental to agricultural production. Although no equine remains were identified from either of the Upper Chesapeake plantation sites (Bowen et al. 2016; O'Steen 1986), probate records and the two articulated horse skeletons revealed valuable information on the working lives of equines in the eighteenth-century Chesapeake. Nearly every eighteenth-century plantation in the Chesapeake had horses, but mules were only recorded in a very small number of Chesapeake plantation probates (less than 2% of the total sample). These horses largely worked in traction activities, pulling either agricultural equipment or personal vehicles. In the second half of the eighteenth century, horses were the chief plow animal on Chesapeake plantations. With their fields having been worked by oxen earlier in the eighteenth century, planters could now fully appreciate the speed which horses brought to plowing (Langdon 1986:100, 255). Horses also commonly transported single passengers in riding chairs or multiple passengers in coaches in the eighteenth-century Chesapeake. Zooarchaeologically, this dissertation was able to assess working horses through the analysis of two articulated late-eighteenth-century horse skeletons from the Lower Chesapeake subregion. The Jamestown horse was an elderly male which likely lived and worked on a plantation as a riding and cart horse (Carlson 2014b). In contrast, the Yorktown horse was likely a military riding horse which died from a percussive force during the American Revolution (Carlson Dietmeier 2015b). These two skeletons provide an important opportunity to explore working horses in the Chesapeake from more than just the documentary record.

Working oxen and equines contributed more than just physical labor to the landscape of eighteenth-century plantations; working animals were part and parcel of the social landscape as well. Elite status in the eighteenth century was marked by the circulation of people and animals around an individual; this elite status could be manifested in multiple ways depending on one's perspective. From the perspective of the planter, enslaved individuals who worked with animals were awarded higher status and respect than those who were unskilled workers. Within the enslaved community, those who worked with animals were also awarded relatively high status because of their ability to use those skills and associations with animals to earn cash, to be outside of direct white supervision at times, to be relatively mobile, and to provide services to the other members of the community, such as the passing of messages back and forth (Blassingame 1976:141-142).

Plantation residents of all classes and statuses also used working animals and their associations with working animals to create landscapes of domination and landscapes of resistance. Planters created physical reminders of what they viewed was the appropriate social hierarchy, with features, animals, and structures built and placed in a way to speak of their wealth, education, and influence. Plowing and draught animals in the Chesapeake indicated that the planter had switched from tobacco to mixed grain cultivation, evidencing his reading of British agricultural literature and relative wealth. Similarly, traveling by horse-drawn riding chair in the Lowcountry showcased the planters' mobility and need to travel throughout the Lowcountry to attend to the affairs of multiple landholdings. On the plantations, well-constructed, roomy stables and poorly-constructed or cramped dwellings for the enslaved workforce were physical reminders of the enslaved laborers' subhuman status in the eighteenth century. These landscapes of domination were normalized further through codified laws and non-codified customs which regulated the interactions that occurred between animals and people of different classes.

However, enslaved individuals were able to create their own animal landscapes: animal landscapes of resistance. Through slow speeds when plowing or only carrying half-full loads in their carts, enslaved drovers, plowers, and carters were able to undermine the structures of power present throughout the eighteenth-century Chesapeake. Furthermore, in both the Chesapeake and the Lowcountry, enslaved individuals could use their associations with working animals to actively revolt, such as running away while hired out as plowers to other plantations or while riding throughout the countryside to round up free-ranging livestock.

As can be seen in the above examples and throughout this dissertation, the Chesapeake and Lowcountry provide ample opportunity for studying the multiple roles which working animals played simultaneously in eighteenth-century society. These two regions were similar enough in their social, cultural, and ecological constituents so as to be comparable, yet different enough in their agricultural, societal, and historical processes so as to provide thoughtful comparisons of how animals and humans influenced each other's lives in each region. However, by narrowing the focus of this dissertation to working oxen and equines on eighteenth-century Chesapeake and Lowcountry plantations, this dissertation limited the zooarchaeological data it was able to assess. The four plantation sites used in this dissertation represent some of the richest archaeological and zooarchaeological assemblages from eighteenth-century elite rural estates. Yet, because of the select elements needed for the analysis of traction-related pathologies in cattle and the overall lack of equine remains, these assemblages could only hint at the presence of working oxen and equines on eighteenth-century plantations.

By incorporating more faunal data from more sites throughout both regions, future research could illuminate further the presence of working animals and could explore the finer nuances of animal husbandry. As the four plantation sites used in this dissertation returned some of the largest eighteenth-century plantation faunal assemblage, there are few comparable plantations which would be able to supply additional faunal assemblages. However, by incorporating faunal assemblages from urban deposits, one could compare the urban and rural experience, exploring the market systems in place in each region and those systems' effects on the livestock living and working on rural plantations.

Additionally, the datasets used in this dissertation represent elite plantations. The faunal assemblages from the Upper Chesapeake and the Lowcountry represent very wealthy and successful eighteenth-century plantation operations. The probate inventories, too, represent wealthy, genteel planters in the Upper Chesapeake and wealthy, Charleston-influenced planters in the Lowcountry. Similarly, the two sites used as case studies in the built environment of the animal landscape, Mount Vernon and Drayton Hall, were elite showpieces. George Washington was an innovative Upper Chesapeake planter; he fully abandoned tobacco as a cash crop in the 1760s, a time when many Upper Chesapeake planters were engaged in grain production alongside tobacco production (Walsh 2010:633). Washington's Mount Vernon estate, therefore, reflects his agricultural acumen and employed husbandry techniques which would have been hard for the average middling Chesapeake farmer to achieve. Likewise, Drayton Hall was an architectural and landscape manifestation of the Drayton family's wealth and influence throughout the Lowcountry. This plantation was literally a showpiece throughout much of the eighteenth century, producing crops for home rather than for market consumption. Although it was common for Lowcountry plantations to be just one of many plantations owned by a single planter, Drayton Hall is unique in its role as a country estate more than a productive plantation. Again, the inclusion of additional faunal assemblages in future research can further parse out the unique characteristics of these showpiece estates and how those unique traits contributed to the overall plantation landscapes of the two regions.

This inclusion of additional data in future research endeavors, however, still focuses on the animal landscapes of eighteenth-century Chesapeake and Lowcountry plantations, thereby overlooking innumerable other animal landscapes. Future research could expand the regional focus of this study. By including zooarchaeological samples from rural sites in eighteenth-century New England, the methodologies for osteologically identifying working oxen could be further refined, as New England farmers relied on the labors of oxen to a greater extent than did their counterparts in the Chesapeake and Lowcountry. Furthermore, the different labor and social structures present in eighteenth-century New England would provide a unique perspective on the integration of working animals into the human social sphere. Research on past animal landscapes in North America can be expanded temporally, too. The nineteenth-century Chesapeake and Lowcountry saw changes in agricultural practices and further legislative and social regulation of the lives of enslaved individuals, therefore providing the opportunity to explore animal landscapes on the eve of civil war.

Yet, animal landscapes do not just occur with working animals, or only in North America, or even only in the past. Even today, animals are integrated into human society on nutritious, religious, economic, and social planes. Sports teams use animals as mascots, imbuing their players with the noble characteristics of that animal. Small-scale dairy farmers not only depend on the cattle for their economic livelihood but also take part of their identity as a farmer from their individual cattle.

Human and animal lives are so seamlessly intertwined that we rarely deconstruct what these interactions disclose about us. Rather, we simply categorize animals as either pets or food and do little else to contemplate what their lives reveal about our lives. By explicitly exploring the interactions between humans and animals, this dissertation works against this dichotomization of animals and recognizes that animals can and do serve multiple roles in human life simultaneously. By focusing on working oxen and equines, this dissertation explores the non-nutritive side of human-animal interactions, an aspect which has largely been overlooked in North American zooarchaeology. In addition to permitting the exploration of an often disregarded human-animal interaction, working animals provide an excellent opportunity to explore the integration of animals into the social realm of humans, as working oxen and equines interacted with people more often and in different ways than did those animals kept only for meat or products.

These interactions between people and animals as well as the interactions between and amongst multiple people of different backgrounds occur on the landscape. Landscapes are complex social arenas in which all components of our daily lives—people, plants, animals, landforms, and human-made structures—interact. In the animal landscape approach utilized in this dissertation, all humans and all animals are understood as active agents in the creation, maintenance, and alteration of that landscape. In this way, this dissertation breaks the mold of thinking of animals as static characters with no impact on historical and social processes. Similarly, all humans, regardless of age, sex, race, or class, are given voice. Through these voices, one can see how humans and animals on eighteenth-century plantations and today work together to create the animal landscapes which make up our everyday lives.

Animals provide society with physical, social, and emotional capital, often all at the same time. On eighteenth-century plantations, oxen, horses, and mules provided the labor and transportation necessary for the day to day operations of the estates to run smoothly. Moreover, these same animals provided the residents of the plantations with a means to both establish and to undermine the power differentials inherent throughout the eighteenth-century Chesapeake and Lowcountry. As Philo and Wilbert (2000:2) write, "Humans are always, and have always been, enmeshed in social relations with animals to the extent that the latter, the animals, are undoubtedly constitutive of human societies in all sorts of ways." It is time that we look beyond the butcher's block to see all of the ways animals have impacted and still do impact human lives.

Appendix A. Cattle Pathology Worksheets

Following Bartosiewicz et al.'s (1997) methodology, pathologies on cattle metacarpals, metatarsals, first phalanges, second phalanges, and third phalanges from each site were scored for presence / absence (1-2) or severity (1-4). These scores were recorded on the following worksheets, even for incomplete elements.

Site: ______________________________ Recorded by: ______________________________ Date: __________________________

Cattle Metacarpal Pathologies

UB no.	Context	Side	Pr Exost (1-4)	Pr Lip (1-3)	Pr Eburn (1-2)	Pr Facet (1-2)	Di Exost (1-4)	Di Broad (1-4)	Di Depr (1-3)	Di Eburn (1-2)	Fusion (1-2)

Site: ______________________________ Recorded by: ____________________________ Date: _________________________

Cattle Metatarsal Pathologies

UB no.	Context	Side	Pr Exost (1-4)	Pr Lip (1-3)	Pr Eburn (1-2)	Di Exost (1-4)	Di Broad (1-4)	Di Depr (1-3)	Di Eburn (1-2)	Fusion (1-2)

Site: ______________________ Recorded by: __________________________ Date: ____________

Cattle Phalanx I Pathologies

UB no.	Context	Side	Pr Exost (1-4)	Pr Lip (1-4)	Pr Eburn (1-2)	Di Exost (1-4)	Di Eburn (1-2)

Site: ______________________ Recorded by: __________________________ Date: _____________

Cattle Phalanx II Pathologies

UB no.	Context	Side	Pr Exost (1-4)	Pr Lip (1-4)	Pr Eburn (1-2)	Di Exost (1-4)	Di Eburn (1-2)

Site: ________________ Recorded by: ________________ Date: _______

Cattle Phalanx III Pathologies

UB no.	Contxt.	Side	Pr Exost (1-4)	Pr Lip (1-4)	Pr Eburn (1-2)

Appendix B. Additional Faunal Data

The following pages contain additional figures and tables of data from the zooarchaeological assemblages. First, additional figures are presented from the analysis of the pathological indices on specimens from the eighteenth-century Chesapeake. Additional figures from the analysis of pathological indices on specimens from the eighteenth-century Lowcountry follow. Next, tables of epiphyseal fusion data from the eighteenth-century Chesapeake and Lowcountry are presented. These tables were used in the construction of the age-at-death figures in Chapter 7. Finally, this appendix contains figures which show temporal change in the distal breadth of metacarpals from the Chesapeake and Lowcountry. The sample sizes for the second and third quarters of the eighteenth century of both the Chesapeake and the Lowcountry are too small for reliable conclusions to be drawn. As such, these were combined into general eighteenth-century assemblages for each region for the analysis presented in Chapter 7.

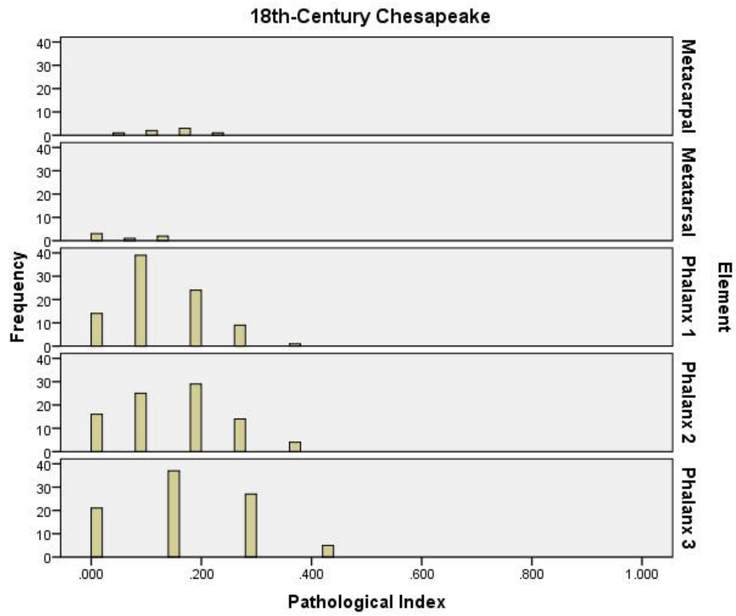


Figure B1. Distribution of the PI of complete metapodials and phalanges from the eighteenth-century Chesapeake.

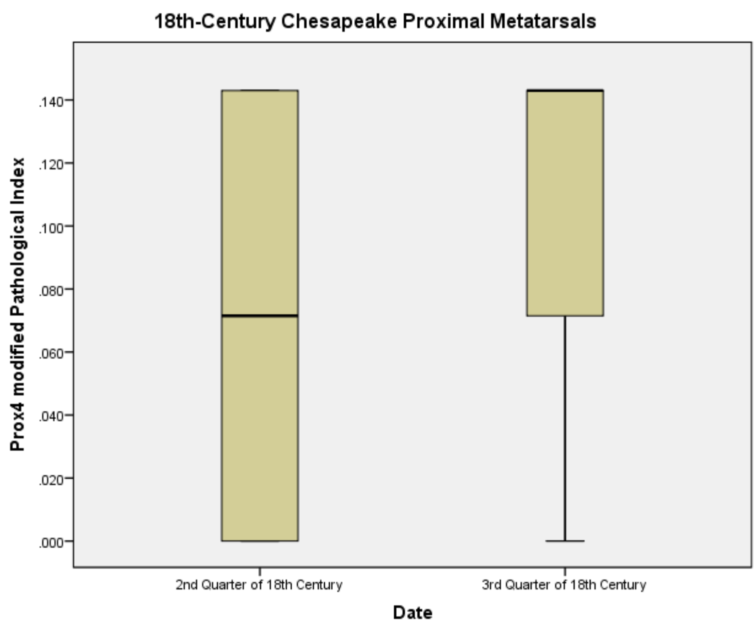


Figure B2. The Prox4 mPI of complete and incomplete Chesapeake metatarsals (n= 10 and 4)

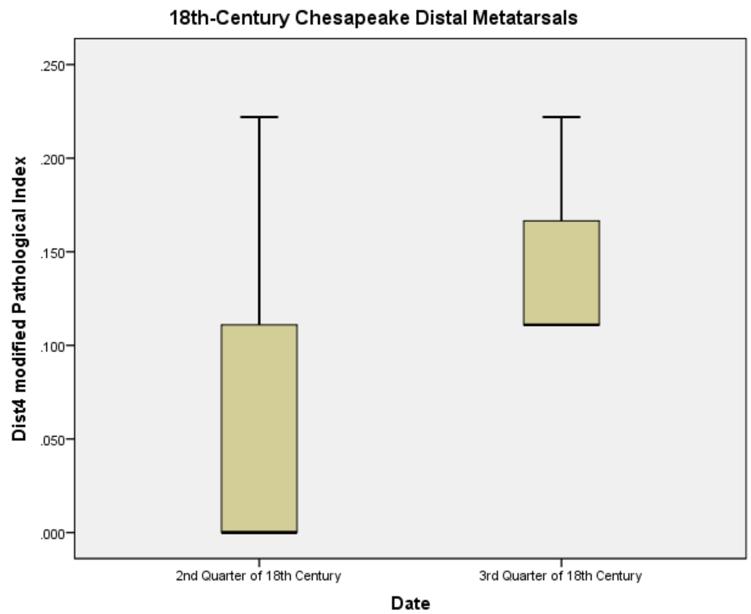


Figure B3. The Dist4 mPI of complete and incomplete Chesapeake metatarsals (n=14 and 3)

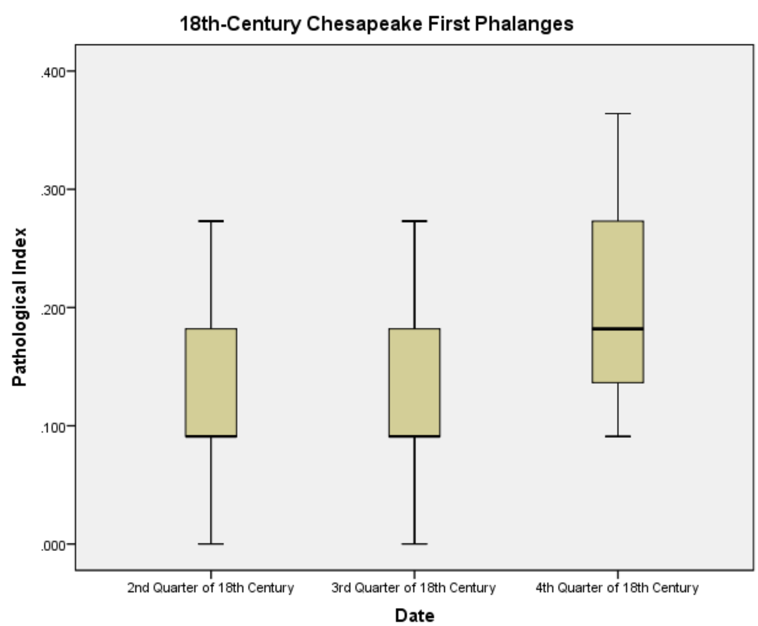


Figure B4. The Pathological Indices (PI) of First Phalanges from the Chesapeake (n=61, 22, and 3)

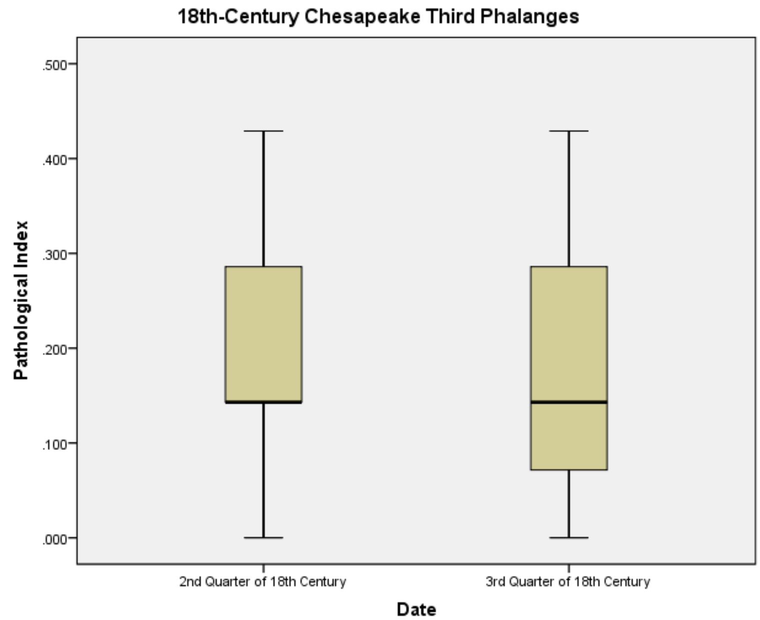


Figure B5. The Pathological Indices (PI) of Third Phalanges from the Chesapeake. (n = 70 and 20)

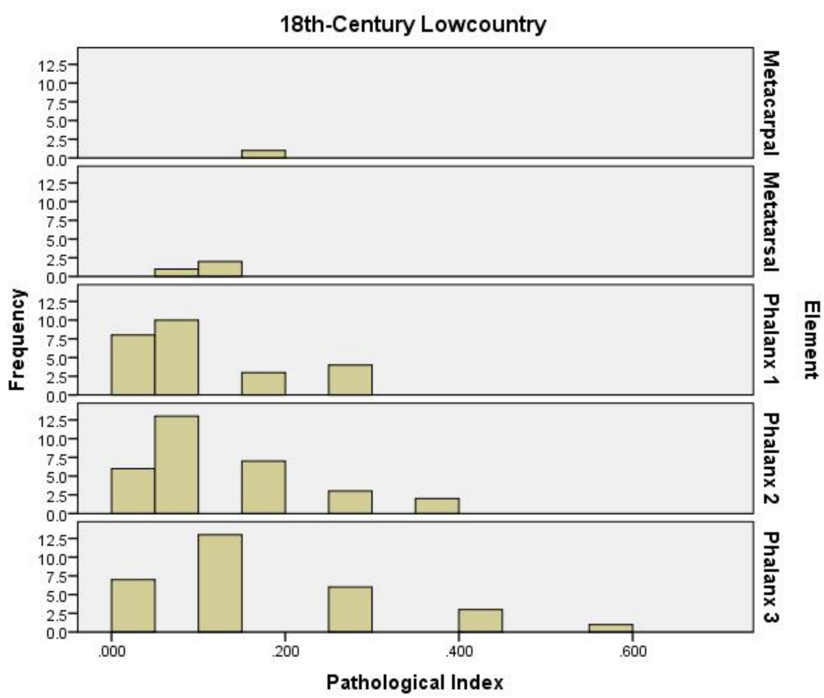


Figure B6. Distribution of the PI of complete metapodials and phalanges from the eighteenth-century Lowcountry.

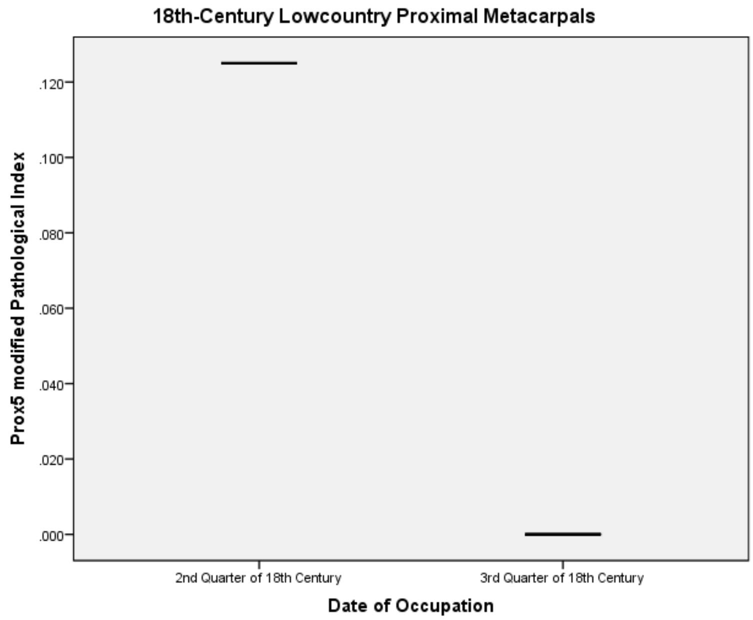


Figure B7. The Prox5 mPI of complete and incomplete Lowcountry metacarpals. (n= 4 and 1)

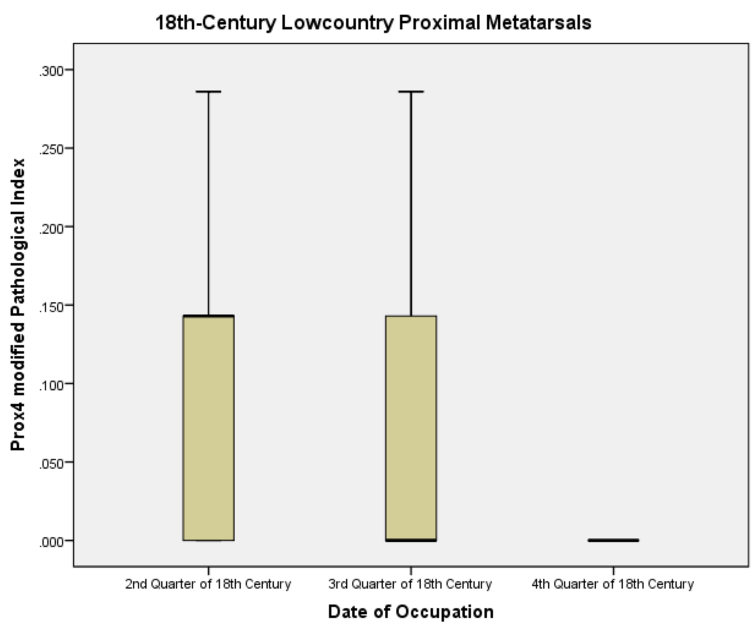


Figure B8. Prox4 mPI of complete and incomplete Lowcountry metatarsals. (n=10, 4, and 3)

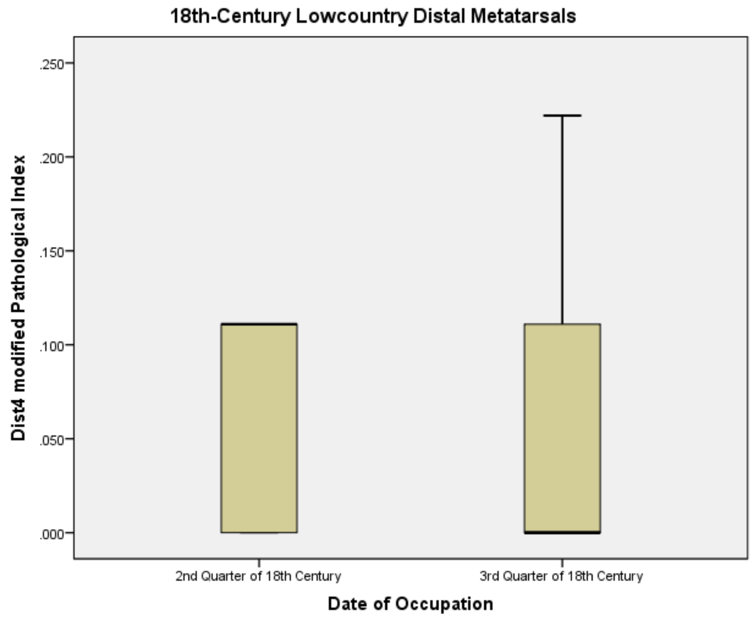


Figure B9. The Dist4 mPI of complete and incomplete Lowcountry metatarsals. (n=5 and 5)

Table B1. Chesapeake Cattle Epiphyseal Fusion Data – 2nd Quarter of the 18th Century

Age Group	**Element**	**Fusion Age**	**Number Fused**	**Number Unfused**	**Number Fusing**
Neonate					
	Radius – Proximal	12-18 mos.	0	1	0
	Total:		0	1	0
	Percent of Neonate:		0%	100%	0%
Juvenile					
	Scapula	7-10 months	3	0	0
	Innominate	7-10 months	3	0	0
	Humerus – Distal	12-18 mos.	1	0	0
	Radius – Proximal	12-18 mos.	5	0	0
	1st & 2nd Phalanges – Proximal	18 months	11	0	0
	Total:		23	0	0
	Percent of Juvenile:		100%	0%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	1	0	0
	Tibia – Distal	24-30 mos.	1	1	0
	Metatarsal – Distal	30-36 mos.	3	0	0
	Metapodial – Distal	24-36 mos.	0	0	0
	Calcaneus	36-42 mos.	0	3	2
	Total:		5	4	2
	Percent of SubAdult:		45.45%	36.36%	18.18%
Adult					
	Femur – Proximal	42 months	0	0	0
	Humerus – Prox.	42-48 mos	0	0	0
	Radius – Distal	42-48 mos.	0	2	0
	Ulna – Proximal	42-48 mos.	0	0	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	0	0	0
	Tibia – Proximal	42-48 mos.	0	0	0
	Total:		0	2	0
	Percent of Adult:		0%	100%	0%

Table B2. Chesapeake Cattle Epiphyseal Fusion Data – 3rd Quarter of 18th Century

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	Innominate	7-10 months	0	1	0
	Total:		0	1	0
	Percent of Neonate:		0%	100%	0%
Juvenile					
	Scapula	7-10 months	2	0	0
	Innominate	7-10 months	2	0	0
	Humerus – Distal	12-18 mos.	1	1	0
	Radius – Proximal	12-18 mos.	3	0	0
	1st & 2nd Phalanges – Proximal	18 mos.	21	0	0
	Total:		29	1	0
	Percent of Juvenile:		96.67%	3.33%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	4	0	0
	Tibia – Distal	24-30 mos.	0	0	0
	Metatarsal – Distal	30-36 mos.	1	0	0
	Metapodial – Distal	24-36 mos.	0	0	0
	Calcaneus	36-42 mos.	1	2	0
	Total:		6	2	0
	Percent of SubAdult:		75%	25%	0%
Adult					
	Femur – Proximal	42 months	0	1	0
	Humerus – Prox.	42-48 mos.	0	0	0
	Radius – Distal	42-48 mos.	0	1	2
	Ulna – Proximal	42-48 mos.	0	1	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	1	0	0
	Tibia – Proximal	42-48 mos.	0	3	0
	Total:		1	6	2
	Percent of Adult:		11.11%	66.67%	22.22%

Table B3. Chesapeake Cattle Epiphyseal Fusion Data – 4th Quarter of 18th Century

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	Total:		0	0	0
	Percent of Neonate:		0%	0%	0%
Juvenile					
	Scapula	7-10 months	0	0	0
	Innominate	7-10 months	1	0	0
	Humerus – Distal	12-18 mos.	0	0	0
	Radius – Proximal	12-18 mos.	1	0	0
	1st & 2nd Phalanges – Proximal	18 months	4	0	0
	Total:		6	0	0
	Percent of Juvenile:		100%	0%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	0	0	0
	Tibia – Distal	24-30 mos.	1	1	0
	Metatarsal – Distal	30-36 mos.	1	0	0
	Metapodial – Distal	24-36 mos.	0	0	0
	Calcaneus	36-42 mos.	0	1	0
	Total:		2	2	0
	Percent of SubAdult:		50%	50%	0%
Adult					
	Femur – Proximal	42 months	0	0	0
	Humerus – Prox.	42-48 mos.	0	0	0
	Radius – Distal	42-48 mos.	0	0	0
	Ulna – Proximal	42-48 mos.	0	0	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	0	0	0
	Tibia – Proximal	42-48 mos.	0	0	0
	Total:		0	0	0
	Percent of Adult:		0%	0%	0%

Table B4. Chesapeake Cattle Epiphyseal Fusion Data – 18th Century Overall

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate			0	1	0
	Innominate	7-10 months	0	1	0
	Radius – Proximal	12-18 mos.			
	Total:		0	2	0
	Percent of Neonate:		0%	100%	0%
Juvenile					
	Scapula	7-10 months	5	0	0
	Innominate	7-10 months	6	0	0
	Humerus – Distal	12-18 mos.	2	1	0
	Radius – Proximal	12-18 mos.	9	0	0
	1st & 2nd Phalanges – Proximal	18 months	36	0	0
	Total:		58	1	0
	Percent of Juvenile:		98.31%	1.69%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	5	0	0
	Tibia – Distal	24-30 mos.	2	2	0
	Metatarsal – Distal	30-36 mos.	5	0	0
	Metapodial – Distal	24-36 mos.	0	0	0
	Calcaneus	36-42 mos.	1	6	2
	Total:		13	8	2
	Percent of SubAdult:		56.52%	34.78%	8.70%
Adult					
	Femur – Proximal	42 months	0	1	0
	Humerus – Prox.	42-48 mos.	0	0	0
	Radius – Distal	42-48 mos.	0	3	2
	Ulna – Proximal	42-48 mos.	0	1	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	1	0	0
	Tibia – Proximal	42-48 mos.	0	3	0
	Total:		1	8	2
	Percent of Adult:		9.09%	72.73%	18.18%

Table B5. Lowcountry Cattle Epiphyseal Fusion Data – 2nd Quarter of 18th Century

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	1st & 2nd Phalanges	18 months	0	1	0
	Femur – Proximal	42 months	0	1	0
		Total:	0	2	0
		Percent of Neonate:	0%	100%	0%
Juvenile					
	Scapula	7-10 months	7	0	0
	Innominate	7-10 months	16	0	0
	Humerus – Distal	12-18 mos.	4	0	0
	Radius – Proximal	12-18 mos.	9	0	0
	1st & 2nd Phalanges – Proximal	18 months	46	0	0
		Total:	82	0	0
		Percent of Juvenile:	100%	0%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	8	4	0
	Tibia – Distal	24-30 mos.	6	0	0
	Metatarsal – Distal	30-36 mos.	5	5	0
	Metapodial – Distal	24-36 mos.	3	5	0
	Calcaneus	36-42 mos.	2	4	0
		Total:	24	18	0
		Percent of SubAdult:	57.14%	42.86%	0%
Adult					
	Femur – Proximal	42 months	1	6	1
	Humerus – Prox.	42-48 mos.	0	2	0
	Radius – Distal	42-48 mos.	0	1	0
	Ulna – Proximal	42-48 mos.	0	1	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	0	1	0
	Tibia – Proximal	42-48 mos.	1	2	0
		Total:	2	13	1
		Percent of Adult:	12.5%	81.25%	6.25%

Table B6. Lowcountry Cattle Epiphyseal Fusion Data – 3rd Quarter of 18th Century

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	Scapula	7-10 months	0	1	0
	Innominate	7-10 months	0	1	0
	Total:		0	2	0
	Percent of Neonate:		0%	100%	0%
Juvenile					
	Scapula	7-10 months	1	0	0
	Innominate	7-10 months	9	0	0
	Humerus – Distal	12-18 mos.	0	0	0
	Radius – Proximal	12-18 mos.	1	0	0
	1st & 2nd Phalanges – Proximal	18 mos.	24	1	0
	Total:		35	1	0
	Percent of Juvenile:		97.22%	2.78%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	7	0	0
	Tibia – Distal	24-30 mos.	1	4	0
	Metatarsal – Distal	30-36 mos.	5	1	0
	Metapodial – Distal	24-36 mos.	3	3	0
	Calcaneus	36-42 mos.	0	4	0
	Total:		16	12	0
	Percent of SubAdult:		57.14%	42.86%	0%
Adult					
	Femur – Proximal	42 months	1	3	0
	Humerus – Prox.	42-48 mos.	0	0	0
	Radius – Distal	42-48 mos.	3	1	0
	Ulna – Proximal	42-48 mos.	0	0	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	0	3	0
	Tibia – Proximal	42-48 mos.	1	1	0
	Total:		5	8	0
	Percent of Adult:		38.46%	61.54%	0%

Table B7. Lowcountry Cattle Epiphyseal Fusion Data – 4th Quarter of 18th Century

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	Total:		0	0	0
	Percent of Neonate:		0%	0%	0%
Juvenile					
	Scapula	7-10 months	0	0	0
	Innominate	7-10 months	2	0	0
	Humerus – Distal	12-18 mos.	3	0	0
	Radius – Proximal	12-18 mos.	0	0	0
	1st & 2nd Phalanges – Proximal	18 months	1	1	0
	Total:		6	1	0
	Percent of Juvenile:		85.71%	14.29%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	0	0	0
	Tibia – Distal	24-30 mos.	0	0	0
	Metatarsal – Distal	30-36 mos.	0	0	0
	Metapodial – Distal	24-36 mos.	2	1	0
	Calcaneus	36-42 mos.	0	0	0
	Total:		2	1	0
	Percent of SubAdult:		66.67%	33.33%	0%
Adult					
	Femur – Proximal	42 months	0	0	0
	Humerus – Prox.	42-48 mos.	0	0	0
	Radius – Distal	42-48 mos.	0	0	0
	Ulna – Proximal	42-48 mos.	0	0	0
	Ulna – Distal	42-48 mos.	0	0	0
	Femur – Distal	42-48 mos.	0	0	0
	Tibia – Proximal	42-48 mos.	0	0	0
	Total:		0	0	0
	Percent of Adult:		0%	0%	0%

Table B8. Lowcountry Cattle Epiphyseal Fusion Data – 18th Century Overall

Age Group	Element	Fusion Age	Number Fused	Number Unfused	Number Fusing
Neonate					
	Scapula	7-10 months	0	1	0
	Innominate	7-10 months	0	1	0
	1st & 2nd Phalanges	18 months	0	1	0
	Femur – Proximal	42 months	0	1	0
	Total:		0	4	0
	Percent of Neonate:		0%	100%	0%
Juvenile					
	Scapula	7-10 months	8	0	0
	Innominate	7-10 months	28	0	0
	Humerus – Distal	12-18 mos.	8	0	0
	Radius – Proximal	12-18 mos.	11	0	0
	1st & 2nd Phalanges – Proximal	18 months	76	2	0
	Total:		131	2	0
	Percent of Juvenile:		98.50%	1.50%	0%
SubAdult					
	Metacarpal – Distal	24-30 mos.	15	4	0
	Tibia – Distal	24-30 mos.	7	4	0
	Metatarsal – Distal	30-36 mos.	10	6	0
	Metapodial – Distal	24-36 mos.	10	12	0
	Calcaneus	36-42 mos.	2	8	0
	Total:		44	34	0
	Percent of SubAdult:		56.41%	43.59%	0%
Adult					
	Femur – Proximal	42 months	2	9	1
	Humerus – Prox.	42-48 mos.	0	2	0
	Radius – Distal	42-48 mos.	3	3	0
	Ulna – Proximal	42-48 mos.	1	2	0
	Ulna – Distal	42-48 mos.	0	1	0
	Femur – Distal	42-48 mos.	0	4	0
	Tibia – Proximal	42-48 mos.	2	3	0
	Total:		8	24	1
	Percent of Adult:		24.24%	72.73%	3.03%

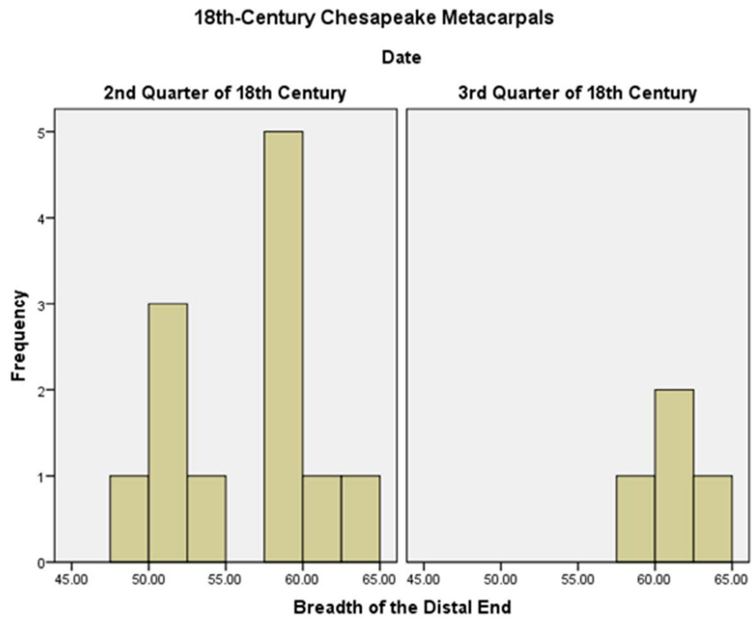


Figure B10. The breadth of the distal end of metacarpals from the second and third quarters of the eighteenth century in the Chesapeake.

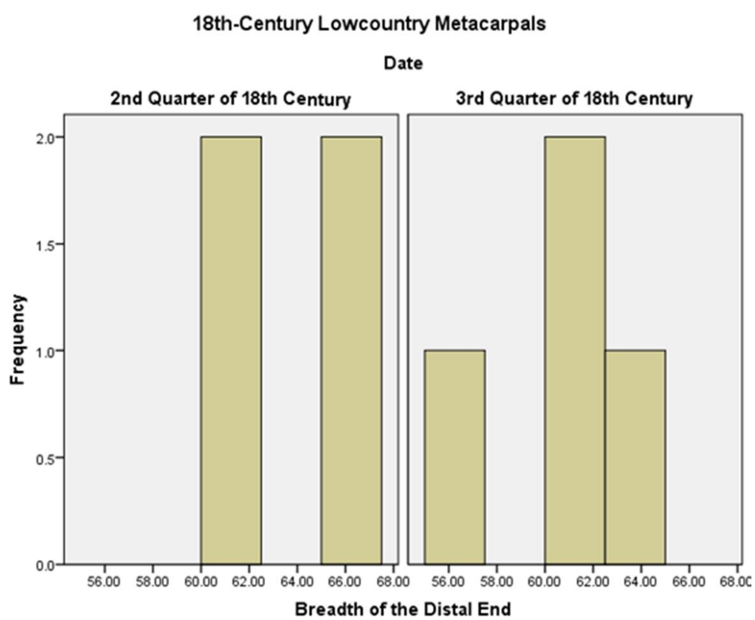


Figure B11. The breadth of the distal end of metacarpals from the second and third quarters of the eighteenth century in the Lowcountry.

Appendix C. Probate Data

The following pages contain the data which was obtained from this dissertation's analysis of eighteenth-century Chesapeake and Lowcountry probate inventories. The full Chesapeake probates are available as transcriptions through the Probing the Past Project (Roy Rosenzweig Center for History and New Media 2006). The full Lowcountry probates are available as scanned images through Fold3 by Ancestry (2016).

Table C1. Probate Inventories Analyzed from Chesapeake Plantations

Date	Name	Plantation Name	Location
1741	Samuel Hanson		Charles County, MD
1742	Sarah Ball		Lancaster County, VA
1742	Dr. William Scott		Prince William County, VA
1742	William Ball, Jr.		Lancaster County, VA
1742	James Samford		Richmond County, VA
1742	Henry Fitzhugh		Stafford County, VA
1743	Capt. John Washington		Stafford County, VA
1744	Robert Osborn		Fairfax County, VA
1744	Raphael Neale		Charles County, MD
1745	Francis Hammersley		Charles County, MD
1745	Thomas Coleman, Sr.		Charles County, MD
1746	Francis Goodrick		Charles County, MD
1746	Zephaniah Wade		Fairfax County, VA
1747	Jesse Ball		Lancaster County, VA
1749	Thomas Lewis	Plantation on Dogue Creek	Fairfax County, VA
1749	Thomas Lewis	Difficult Plantation	Fairfax County, VA
1749	Rawleigh Traverse		Stafford County, VA
1749	Capt. Richard Holmes		Charles County, MD
1750	Leroy Griffin		Richmond County, VA
1750	Bennehan Dudley		Richmond County, VA
1750	Daniel Hornby		Richmond County, VA
1750	Jeduthan Ball		King George County, VA
1751	William Sydnor		Lancaster County, VA
1751	Henry Holland Hawkins		Charles County, MD
1750	Samuel Peachey		Richmond County, VA
1752	Gregory Glascock		Richmond County, VA
1752	Mary Allein		Anne Arundel County, MD
1752	John Washington		Stafford County, VA
1752	Roger Wiggenton		Fairfax County, VA
1753	Jeremiah Greenham		Richmond County, VA
1753	William Phillips		Richmond County, VA
1754	Phillip Alexander		Stafford County, VA
1753	Billington McCarty		Richmond County, VA
1753	John Minor		Fairfax County, VA
1754	Capt. Thomas Barber		Richmond County, VA
1755	William Montague		Middlesex County, VA
1754	James Ball		Lancaster County, VA
1755	Jacob Clements		Charles County, MD

Date	Name	Plantation Name	Location
1755	Hugh West		Fairfax County, VA
1755	Samuel Ogle		Anne Arundel County, MD
1756	John Spann Webb		Richmond County, VA
1756	Rev. Samuel Claget		Charles County, MD
1756	Capt. John Turley		Fairfax County, VA
1756	Col. John Colvill		Fairfax County, VA
1756	John Glascock		Richmond County, VA
1757	William Dent		Charles County, MD
1758	Major Moore Fauntleroy		Richmond County, VA
1758	Joseph Pile		Charles County, MD
1758	Thomas Lee	Stratford Hall	Westmoreland County, VA
1759	Traverse Cooke		Stafford County, VA
1759	Willoughby Allerton		Westmoreland County, VA
1759	James Nevison		Charles County, MD
1760	Gawen Corbin		Westmoreland County, VA
1760	James Wardrope		Prince George's County, MD
1760	Matthew Barnes		Charles County, MD
1760	Dr. Alexander Reade		Middlesex County, VA
1761	Edward Cole, Jr.		Charles County, MD
1761	Nathaniel Chapman		Charles County, MD
1761	Thomas W. Griffin		Richmond County, VA
1761	Eleanor Addison		Prince George's County, MD
1761	William Bertrand		Lancaster County, VA
1761	Hugh Mitchell		Charles County, MD
1762	Capt. John Bailey		Lancaster County, VA
1762	Dr. Gustavus Brown		Charles County, MD
1762	Henry Browne		Surry County, VA
1763	William Neale		Charles County, MD
1763	Mrs. Ann Mason		Stafford County, VA
1763	Daniel Tebbs		Westmoreland County, VA
1763	Col. Edwin Conway		Lancaster County, VA
1763	Major William Walker		Stafford County, VA
1764	Henry Woodward		Anne Arundel County, MD
1764	Joseph Milburn Semmes		Charles County, MD
1764	John Bond		Lancaster County, VA
1763	John Fendall		Charles County, MD
1764	John Stone Hawkins		Prince George's County, MD
1765	Col. John Addison		Prince George's County, MD
1765	William Eilbeck		Charles County, MD
1766	Lawrence Butler		Westmoreland County, VA

Date	Name	Plantation Name	Location
1766	Elizabeth Lawson		Prince George's County, MD
1766	Thomas Clark		Prince George's County, MD
1767	Charles Clark		Prince George's County, MD
1767	Thomas Hollyday		Prince George's County, MD
1767	Willoughby Newton		Westmoreland County, VA
1767	John Brice		Anne Arundel County, MD
1767	Capt. John Stoddert		Charles County, MD
1768	William Webb		Richmond County, VA
1768	Major Traverse Tarpley		Richmond County, VA
1768	Sabina Trueman Marshall		Charles County, MD
1768	Colonel Jeremiah Belt		Prince George's County, MD
1768	Thomas Chinn		Lancaster County, VA
1768	James Edelin		Prince George's County, MD
1769	Henry Brent		Charles County, MD
1769	Unknown Person		Richmond County, VA
1769	Major Francis Waring		Prince George's County, MD
1769	Richard Chew		Anne Arundel County, MD
1769	Bayne Smallwood		Charles County, MD
1770	Randolph Morris Hawkins		Charles County, MD
1770	William Trueman Stoddert		Charles County, MD
1771	William Hall	Elk Ridge Plantation	Anne Arundel County, MD
1772	Walter Trueman Stoddert		Charles County, MD
1772	Mordecai Jacob		Prince George's County, MD
1772	Thomas Hornsby	Cherry Hall Plantation	York County, VA
1772	Thomas Hornsby	Porter's	James City County, VA
1772	Thomas Hornsby	Pohatan Plantation	James City County, VA
1772	Thomas Hornsby	Creek Plantation	James City County, VA
1772	Daniel French		Fairfax County, VA
1773	Charles Carroll, Jr.		Prince George's County, MD
1773	Joshua Singleton		Richmond County, VA
1773	Sarah Pye		Charles County, MD
1773	Billington McCarty		Richmond County, VA
1773	John Suggitt		Richmond County, VA
1774	Capt. John Laidler		Charles County, MD
1774	Robert Portues Downman		Richmond County, VA
1774	Peter Wagener		Fairfax County, VA
1774	John Hepburn, Jr.		Prince George's County, MD
1775	Thomas Addison		Prince George's County, MD
1775	John Hepburn, Sr.		Prince George's County, MD
1776	John Fendall Beall		Prince George's County, MD

Date	Name	Plantation Name	Location
1776	Dr. Nicholas Flood		Richmond County, VA
1776	Philip Ludwell Lee	Stratford Hall	Westmoreland County, VA
1777	Andrew Leitch		Prince William County, VA
1778	Thomas Truman		Prince George's County, MD
1779	George Maxwell		Charles County, MD
1779	Isaac Lansdale		Prince George's County, MD
1779	James Key		Charles County, MD
1779	George Gant		Prince George's County, MD
1779	Dr. Joseph Aderton		Prince George's County, MD
1780	Dr. David Ross		Prince George's County, MD
1780	John Carlyle	Bridekirk	Fairfax County, VA
1780	John Carlyle	Tarthorwald	Fairfax County, VA
1780	Peter Presly Thornton		Northumberland County, VA
1781	Rawleigh Downman		Lancaster County, VA
1781	Col. Truman Skinner		Prince George's County, MD
1781	William Stott		Lancaster County, VA
1781	Col. Richard Harrison		Charles County, MD
1781	Richard Mitchell		Lancaster County, VA
1782	Thomas MacGill		Prince George's County, MD
1782	Robert Gilmour		Lancaster County, VA
1782	Thomas Fairfax		Frederick County, VA
1782	Col. James Montague		Middlesex County, VA
1782	Alexander Howard Magruder		Prince George's County, MD
1782	John Parke Custis	Upper Plantation	Fairfax County, VA
1783	Margaret Ball		Westmoreland County, VA
1783	Joseph Pemberton		Anne Arundel County, MD
1783	Henry Hilleary		Prince George's County, MD
1784	Col. Thomas Williams		Prince George's County, MD
1784	John Mills		Fairfax County, VA
1784	Henry Bradford		Prince George's County, MD
1784	Capt. Judson Coolidge		Prince George's County, MD
1784	Rev. James Scott		Prince William County, VA
1785	Christopher Lowndes		Prince George's County, MD
1785	William Glascock		Richmond County, VA
1785	Tobias Belt		Prince George's County, MD
1785	Richard Burgess		Prince George's County, MD
1785	Francis Hatfield		Prince George's County, MD
1785	Dr. Richard Brooke		Prince George's County, MD
1785	Benjamin Jameson		Charles County, MD
1785	James Hunter		Stafford County, VA

Date	Name	Plantation Name	Location
1785	George T. Hawkins		Prince George's County, MD
1786	Enoch Magruder		Prince George's County, MD
1786	Nathaniel Magruder		Prince George's County, MD
1786	Thompson Mason		Stafford County, VA
1787	Benjamin Brookes		Prince George's County, MD
1787	Walter Williams		Prince George's County, MD
1788	Richard Duckett		Prince George's County, MD
1789	Richard Lee		Charles County, MD
1789	William Harrison		Charles County, MD
1789	William Clagett		Prince George's County, MD
1789	Capt. James Craine		Lancaster County, VA
1789	Rev. Richard Brown		Charles County, MD
1789	Rev. John Leland		Lancaster County, VA

Table C2. Oxen Inventoried in Chesapeake Plantation Probates

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1741	S. Hanson							30
1742	S. Ball					6	6	61
1742	W. Scott							28
1742	W. Ball, Jr.		2			2	4	60
1742	J. Samford					4	4	18
1742	H. Fitzhugh					6	6	125
1743	J. Washington		4				4	37
1744	R. Osborn							11
1744	R. Neale							43
1745	F. Hammersley							24
1745	T. Coleman, Sr.							27
1746	F. Goodrick							245
1746	Z.h Wade							32
1747	J. Ball					4	4	122
1749	T. Lewis					3	3	30
1749	T. Lewis							26
1749	R. Traverse					2	2	33
1749	R. Holmes							12
1750	L. Griffin					4	4	80
1750	B. Dudley							20
1750	D. Hornby					6	6	107
1750	J. Ball			2			2	29
1751	W. Sydnor		4				4	62
1751	H. H. Hawkins							80
1750	S. Peachey		4			4	8	115
1752	G. Glascock					2	2	24
1752	M. Allein							18
1752	J. Washington		2			1	3	33
1752	R. Wiggenton					2	2	16
1753	J. Greenham						4	24
1753	W. Phillips					2	2	11
1754	P. Alexander					7	7	76
1753	B. McCarty					2	2	29
1753	J. Minor							13
1754	T. Barber					2	2	14
1755	W. Montague					8	8	151

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1754	J. Ball							66
1755	J. Clements							20
1755	H. West							28
1755	S. Ogle							
1756	J. S. Webb							41
1756	S. Claget							42
1756	J. Turley							28
1756	J. Colvill		4				4	89
1756	J. Glascock					8	8	43
1757	W. Dent	4					4	106
1758	M. Fauntleroy					8	8	191
1758	J. Pile							51
1758	T. Lee					24	24	276
1759	T. Cooke					5	5	38
1759	W. Allerton		13			5	18	35
1759	J. Nevison							26
1760	G. Corbin							135
1760	J. Wardrope							9
1760	M. Barnes							46
1760	A. Reade					7	7	24
1761	E. Cole, Jr.							86
1761	N. Chapman					2	2	46
1761	T. Griffin		6			4	10	116
1761	E. Addison					6	6	117
1761	W. Bertrand		6				6	80
1761	H. Mitchell					2	2	39
1762	J. Bailey					6	6	20
1762	G. Brown							63
1762	H. Browne							75
1763	W. Neale					6	6	52
1763	A. Mason					7	7	49
1763	D. Tebbs						9	70
1763	E. Conway							44
1763	W. Walker				1	8	9	60
1764	H. Woodward							52
1764	J. M. Semmes					5	5	50
1764	J. Bond					6	6	55
1763	J. Fendall					2	2	31

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1764	J. S. Hawkins			2			2	46
1765	J. Addison		4				4	105
1765	W. Eilbeck							72
1766	L. Butler					4	4	69
1766	E. Lawson							40
1766	T. Clark							31
1767	C. Clark							44
1767	T. Hollyday		4				5	49
1767	W. Newton					21	21	126
1767	J. Brice							137
1767	J. Stoddert							36
1768	W. Webb					6	6	35
1768	T. Tarpley		1			4	5	37
1768	S. T. Marshall							16
1768	J. Belt							48
1768	T. Chinn						2	38
1768	J. Edelin							31
1769	H. Brent							40
1769	Unknown					18	18	144
1769	F. Waring							22
1769	R. Chew					10	10	90
1769	B. Smallwood					9	9	139
1770	R. M. Hawkins							3
1770	W. T. Stoddert							18
1771	W. Hall							33
1772	W. T. Stoddert							27
1772	M. Jacob							10
1772	T. Hornsby							32
1772	T. Hornsby							18
1772	T. Hornsby							22
1772	T. Hornsby							24
1772	D. French							161
1773	C. Carroll, Jr.					2	2	30
1773	J. Singleton					6	6	43
1773	S. Pye							25
1773	B. McCarty					6	6	28
1773	J. Suggitt					6	6	46
1774	J. Laidler					4	4	29

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1774	R. P. Downman					8	8	49
1774	P. Wagener							25
1774	J. Hepburn, Jr.					2	2	11
1775	T. Addison		6				6	96
1775	J. Hepburn, Sr.	6				19	25	153
1776	J. F. Beall					2	2	23
1776	N. Flood							57
1776	P. L. Lee				2	30	32	206
1777	A. Leitch							20
1778	T. Truman					4	4	96
1779	G. Maxwell					4	4	30
1779	I. Lansdale	8				4	12	38
1779	J. Key					4	4	22
1779	G. Gant					4	4	60
1779	J. Aderton					6	6	30
1780	D. Ross							29
1780	J. Carlyle	2					2	21
1780	J. Carlyle							69
1780	P. P. Thornton				1	22	23	148
1781	R. Downman							118
1781	T. Skinner	4				1	5	20
1781	W. Stott					4	4	44
1781	R. Harrison					2	2	29
1781	R. Mitchell					20	20	85
1782	T. MacGill							31
1782	R. Gilmour							26
1782	T. Fairfax							134
1782	J. Montague					2	2	26
1782	A. H. Magruder					4	4	50
1782	J. P. Custis	4				8	12	118
1783	M. Ball					8	8	45
1783	J. Pemberton		4				4	50
1783	H. Hilleary					2	2	20
1784	T. Williams							16
1784	J. Mills							6
1784	H. Bradford							12
1784	J. Coolidge					2	2	28
1784	J. Scott							28

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1785	C. Lowndes							36
1785	W. Glascock							14
1785	T. Belt							19
1785	R. Burgess							12
1785	F. Hatfield							10
1785	R. Brooke							29
1785	B. Jameson					2	2	26
1785	J. Hunter					4	4	67
1785	G. T. Hawkins					4	4	27
1786	E. Magruder							38
1786	N. Magruder					4	4	28
1786	T. Mason					2	2	30
1787	B. Brookes					6	6	36
1787	W. Williams	2					2	29
1788	R. Duckett							72
1789	R. Lee					13	13	85
1789	W. Harrison					4	4	57
1789	W. Clagett					2	2	65
1789	J. Craine					2	2	2
1789	R. Brown					5	5	25
1789	J. Leland		4				4	14

Table C3. Equines Inventoried in Chesapeake Plantation Probates

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1741	S. Hanson			1						10	
1742	S. Ball									1	
1742	W. Scott									9	
1742	W. Ball, Jr.									8	
1742	J. Samford									5	
1742	H. Fitzhugh	1	2				3			25	
1743	J. Washington									15	
1744	R. Osborn									3	
1744	R. Neale		2	2						21	
1745	F. Hammersley	1						2		6	
1745	T. Coleman, Sr.							1		10	
1746	F. Goodrick							5		28	
1746	Z. Wade									4	
1747	J. Ball									12	
1749	T. Lewis						1			4	
1749	T. Lewis									2	
1749	R. Traverse									8	
1749	R. Holmes	1								6	
1750	L. Griffin	1	2							7	
1750	B. Dudley									4	
1750	D. Hornby		2							7	
1750	J. Ball		2				2			5	
1750	S. Peachey		2							10	
1751	W. Sydnor									1	
1751	H. H. Hawkins	1						7		16	
1752	G. Glascock									3	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1752	M. Allein						4			7	
1752	J. Washington									18	
1752	R. Wiggenton									5.5	
1753	J. Greenham									3	
1753	W. Phillips									2	
1753	B. McCarty									4	
1753	J. Minor									2	
1754	P. Alexander									21	
1754	T. Barber									3	
1754	J. Ball									4	
1755	W. Montague									6	
1755	J. Clements	1						2		6	
1755	H. West									9	
1755	S. Ogle									1	
1756	J. S. Webb									5	
1756	S. Claget	1						1		6	
1756	J. Turley									9	
1756	J. Colvill									25	
1756	J. Glascock									1	
1757	W. Dent	1	2					1		19	
1758	M. Fauntleroy									20	
1758	J. Pile	1						4		17	
1758	T. Lee									parcel	
1759	T. Cooke	1								10	
1759	W. Allerton		2							11	
1759	J. Nevison							1		12	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1760	G. Corbin									27	
1760	J. Wardrope	2	2							14	
1760	M. Barnes									17	
1760	A. Reade									10	
1761	E. Cole, Jr.	1						6		17	
1761	N. Chapman		2							8	
1761	T. Griffin									6	
1761	E. Addison		2							29	
1761	W. Bertrand									5	
1761	H. Mitchell							1		17	
1762	J. Bailey									4	
1762	G. Brown	1	2					2		19	
1762	H. Browne									14	
1763	W. Neale									17	
1763	A. Mason		1							7	
1763	D. Tebbs		2							8	
1763	E. Conway										
1763	W. Walker									8	
1763	J. Fendall							1		25	
1764	H. Woodward		1				5			18	
1764	J. M. Semmes							4		13	
1764	J. Bond									8	
1764	J. S. Hawkins									25	
1765	J. Addison		1							32	
1765	W. Eilbeck		2							17	
1766	L. Butler									5	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1766	E. Lawson									9	
1766	T. Clark						7			11	
1767	C. Clark	1						1		27	
1767	T. Hollyday	1	1							13	
1767	W. Newton				4		1			15	
1767	J. Brice		2							29	
1767	J. Stoddert	1						5		9	
1768	W. Webb		2				1			3	
1768	T. Tarpley									5	
1768	S. T. Marshall									9	
1768	J. Belt									18	
1768	T. Chinn									5	
1768	J. Edelin									13	
1769	H. Brent		1					1		30	
1769	Unknown									14	
1769	F. Waring		1							8	
1769	R. Chew									3	
1769	B. Smallwood	1	2					2		11	
1770	R. M. Hawkins									6	
1770	W. T. Stoddert									12	
1771	W. Hall									14	
1772	W. T. Stoddert									2	
1772	M Jacob	1	1				4			10	
1772	T. Hornsby									3	
1772	T. Hornsby										
1772	T. Hornsby									2	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1772	T. Hornsby										
1772	D. French									36	
1773	C. Carroll, Jr.				2		1			12	
1773	J. Singleton									5	
1773	S. Pye									7	
1773	B. McCarty									6	
1773	J. Suggitt									5	
1774	J. Laidler		1							11	
1774	R. P. Downman									6	
1774	R. Wagener									6	
1774	J. Hepburn, Jr.									4	
1775	T. Addison				4		1			34	
1775	J. Hepburn, Sr.									35	1
1776	J.F. Beall									7	
1776	N. Flood				2					4	
1776	P. L. Lee									20	
1777	A. Leitch									1	
1778	T. Truman									31	
1779	G. Maxwell									9	
1779	I. Lansdale	1					6			17	
1779	J. Key									3	
1779	G. Gant		1				1	1		17	
1779	J. Aderton									16	
1780	D. Ross					4				13	
1780	J. Carlyle									7	1
1780	J. Carlyle									31	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1780	P. P. Thornton				2		1	1		32	
1781	R. Downman									9	
1781	T. Skinner									9	
1781	W. Stott									6	
1781	R. Harrison									11	
1781	R. Mitchell									3	
1782	T. MacGill									11	
1782	R. Gilmour									5	
1782	T. Fairfax									15	
1782	J. Montague									5	
1782	A. H. Magruder									8	
1782	J. Pu. Custis								2	8	
1783	M. Ball									4	
1783	J. Pemberton									26	
1783	H. Hilleary									14	
1784	T. Williams									11	
1784	J. Mills									3	
1784	H. Bradford		1							11	
1784	J. Coolidge						3			14	
1784	J. Scott				3					7	
1785	C. Lowndes									10	
1785	W. Glascock										
1785	T. Belt									9	
1785	R. Burgess									5	
1785	F. Hatfield									6	
1785	R. Brooke									9	2

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Mules
1785	B. Jameson									15	
1785	J. Hunter					16			4	44	
1785	G. T. Hawkins									11	
1786	E. Magruder								1	15	
1786	N. Magruder									12	
1786	T. Mason			1		1	2			16	
1787	B. Brookes	1						5		13	
1787	W. Williams									11	
1788	R. Duckett									16	
1789	R. Lee				3		3			10	
1789	W. Harrison				2					14	
1789	W. Clagett									22	
1789	J. Craine									3	
1789	R. Brown							2		13	
1789	J. Leland									3	

Table C4. Equine-Specific Vehicles and Equipment Inventoried in Chesapeake Plantation Probates

Date	Name	Drays	Chairs/ Chaises /Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1741	S. Hanson						1	1
1742	S. Ball						1	
1742	W. Scott		1			1	1	
1742	W. Ball, Jr.		1			2	7	3
1742	J. Samford						1	1
1742	H. Fitzhugh		1		1	3	6	2
1743	J. Washington		1			1	2	
1744	R. Osborn						1	
1744	R. Neale		1			1		
1745	F. Hammersley						1	1
1745	T. Coleman, Sr.						1	1
1746	F. Goodrick					parcel	1	
1746	Z.h Wade							
1747	J. Ball		1	1		1	2	4
1749	T. Lewis						3	
1749	T. Lewis							
1749	R. Traverse						1	
1749	R. Holmes						2	1
1750	L. Griffin		1			2	1	1
1750	B. Dudley						1	1
1750	D. Hornby		1			2	3	13
1750	J. Ball		1			2	2	4
1751	W. Sydnor						4	4
1751	H. H. Hawkins						2	1
1750	S. Peachey		1			1	1	
1752	G. Glascock						2	2
1752	M. Allein					5	1	
1752	J. Washington						2	
1752	R. Wiggenton						1	
1753	J. Greenham						2	2
1753	W. Phillips						1	2
1754	P. Alexander		2				3	2
1753	B. McCarty		1			2		
1753	J. Minor		1			1	1	1
1754	T. Barber						1	1
1755	W. Montague		1				4	1
1754	J. Ball						2	2
1755	J. Clements						1	1

Date	Name	Drays	Chairs/ Chaises /Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1755	H. West		1			2		
1755	S. Ogle						1	
1756	J. S. Webb						3	
1756	S. Claget						2	1
1756	J. Turley						3	1
1756	J. Colvill		1			11	10	2
1756	J. Glascock						1	1
1757	W. Dent						2	2
1758	M. Fauntleroy				2	11		
1758	J. Pile		1			1	2	2
1758	T. Lee		1					
1759	T. Cooke							1
1759	W. Allerton		1		1	1	2	1
1759	J. Nevison		2			2		
1760	G. Corbin		1		1	7		
1760	J. Wardrope		1		1	3	3	1
1760	M. Barnes						1	
1760	A. Reade		2			5	3	1
1761	E. Cole, Jr.						5	5
1761	N. Chapman		2			3	1	1
1761	T. Griffin		1			1	1	
1761	E. Addison					1		
1761	W. Bertrand						1	
1761	H. Mitchell		1			1	1	
1762	J. Bailey		1			1	1	1
1762	G. Brown					parcel		
1762	H. Browne				2	3	6	3
1763	W. Neale						1	1
1763	A. Mason		1			1	2	
1763	D. Tebbs		1			2	2	2
1763	E. Conway							
1763	W. Walker		1			2		
1764	H. Woodward		1			3		
1764	J. M. Semmes		1			1	1	2
1764	J. Bond		1			1	1	3
1763	J. Fendall		1			1		
1764	J. S. Hawkins		1			1	1	1
1765	J. Addison		1			1		
1765	W. Eilbeck		1			1	3	1
1766	L. Butler						2	
1766	E. Lawson					parcel	1	2
1766	T. Clark		1			parcel	2	
1767	C. Clark		2			2	1	
1767	T. Hollyday		2			3	2	1
1767	W. Newton				1	6	2	1

Date	Name	Drays	Chairs/ Chaises /Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1767	J. Brice		1			1		
1767	J. Stoddert						3	6
1768	W. Webb		1			1		
1768	T. Tarpley		2			3		2
1768	S. T. Marshall		1			1	2	3
1768	J. Belt		1			parcel	2	
1768	T. Chinn		1				1	
1768	J. Edelin					1	2	
1769	H. Brent					parcel		
1769	Unknown				1	4		
1769	F. Waring		2			2		
1769	R. Chew		1				1	
1769	B. Smallwood		1			1	1	
1770	R. M. Hawkins		1				1	
1770	W. T. Stoddert		1			2	1	5
1771	W. Hall							
1772	W. T. Stoddert		1			2	2	1
1772	M. Jacob		1			1	1	1
1772	T. Hornsby							
1772	T. Hornsby							
1772	T. Hornsby							
1772	T. Hornsby							
1772	D. French		2			1	1	
1773	C. Carroll, Jr.		1		1	6	2	
1773	J. Singleton		1			1	2	3
1773	S. Pye		1				1	
1773	B. McCarty						1	1
1773	J. Suggitt		1			3		
1774	J. Laidler		1			2	3	
1774	R. P. Downman		2			1	2	
1774	P. Wagener		1		1	9	2	1
1774	J. Hepburn, Jr.						3	5
1775	T. Addison				1	1	5	
1775	J. Hepburn, Sr.		1			4	3	5
1776	J. F. Beall						1	5
1776	N. Flood		3		1	3	3	4
1776	P. L. Lee		1		2	6		
1777	A. Leitch							
1778	T. Truman		1			1	1	
1779	G. Maxwell		2			2	3	
1779	I. Lansdale		1			2	1	1
1779	J. Key		1				2	
1779	G. Gant		1			1	1	1
1779	J. Aderton		1			1	1	3
1780	D. Ross					4		

Date	Name	Drays	Chairs/ Chaises /Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness-es	Saddles	Bridles
1780	J. Carlyle							
1780	J. Carlyle						2	1
1780	P. P. Thornton			1		2	1	
1781	R. Downman		1		1		1	
1781	T. Skinner		1			1	1	
1781	W. Stott							
1781	R. Harrison		1				1	1
1781	R. Mitchell		1			1	2	1
1782	T. MacGill					parcel	1	
1782	R. Gilmour		1	1		3	1	1
1782	T. Fairfax					12	2	2
1782	J. Montague				1	2		
1782	A. H. Magruder		2			2	2	1
1782	J. P. Custis						1	2
1783	M. Ball		1			1		
1783	J. Pemberton		1	1		3	1	1
1783	H. Hilleary		1			1		
1784	T. Williams		2			2	2	1
1784	J. Mills						2	1
1784	H. Bradford		1				1	1
1784	J. Coolidge		2		1	8	4	1
1784	J. Scott		1					
1785	C. Lowndes	1			1	6		
1785	W. Glascock							
1785	T. Belt						2	
1785	R. Burgess		1					
1785	F. Hatfield						1	
1785	R. Brooke		1			4		
1785	B. Jameson		1			1		
1785	J. Hunter				1	16		
1785	G. T. Hawkins			1		1		
1786	E. Magruder		2				2	1
1786	N. Magruder		1			1	1	2
1786	T. Mason				1			
1787	B. Brookes					4	3	2
1787	W. Williams		1			2	2	
1788	R. Duckett				1	8	1	3
1789	R. Lee							
1789	W. Harrison				1	1	2	1
1789	W. Clagett				1	2	3	1
1789	J. Craine		1			1	2	1
1789	R. Brown		1			1	1	1
1789	J. Leland		1	1		2	2	

Table C5. Agricultural Equipment Inventoried in Chesapeake Plantation Probates

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1741	S. Hanson			1				1		1	2		
1742	S. Ball			1									
1742	W. Scott												
1742	W. Ball, Jr.			1								1	
1742	J. Samford			1						1		1	
1742	H. Fitzhugh			1						4			
1743	J. Washington									2			
1744	R. Osborn			1						1			
1744	R. Neale									4			
1745	F. Hammersley									2			
1745	T. Coleman, Sr.												
1746	F. Goodrick			1							7		
1746	Z. Wade									1			
1747	J. Ball	1	1	2									
1749	T. Lewis	1	1	2						3	1	3	
1749	T. Lewis									1	1		
1749	R. Traverse												
1749	R. Holmes			1									
1750	L. Griffin			2						2		1	
1750	B. Dudley												
1750	D. Hornby			2								3	
1750	J. Ball			1						2		1	
1750	S. Peachey	1		1								3	
1751	W. Sydnor			3						3	1		
1751	H. H. Hawkins												
1752	G. Glascock			1									

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1752	M. Allein			1						4			
1752	J. Washington	1	1	2						3			
1752	R. Wiggenton									2			
1753	J. Greenham									1			
1753	W. Phillips	1		1								2	
1753	B. McCarty									1			
1753	J. Minor			1						2	1		
1754	P. Alexander	1		1						4			
1754	T. Barber									1		1	
1754	J. Ball												
1755	W. Montague			1						1			
1755	J. Clements			1									
1755	H. West			1						2			
1755	S. Ogle												
1756	J. S. Webb			1						1		1	
1756	S. Claget			1									
1756	J. Turley			1						3	1		
1756	J. Colvill		1	2		1	1			6			
1756	J. Glascock			1								1	
1757	W. Dent							1		2	1		
1758	M. Fauntleroy		1	1						1			
1758	J. Pile			1									
1758	T. Lee	2	1	6									
1759	T. Cooke			1						5		4	
1759	W. Allerton			2						2		2	
1759	J. Nevison			1						3	1		

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1760	G. Corbin	3		3						5			
1760	J. Wardrope			1			1						
1760	M. Barnes												
1760	A. Reade	1	1	2									
1761	E. Cole, Jr.			2						1			
1761	N. Chapman			2						4	1		
1761	T. Griffin									1			
1761	E. Addison			1						parcel			
1761	W. Bertrand			2						1			
1761	H. Mitchell	1		1									
1762	J. Bailey			2						4		2	
1762	G. Brown									1			
1762	H. Browne	1		3						2		1	
1763	W. Neale	1		2				1		3			
1763	A. Mason	1	1	2						4			
1763	D. Tebbs	2		4				1	1	11		4	
1763	E. Conway			2								1	
1763	W. Walker			3								7	
1763	J. Fendall	1		1						1		1	
1764	H. Woodward		2	2						13	1		
1764	J. M. Semmes			2				1		1			
1764	J. Bond	1		2						3		1	
1764	J. S. Hawkins			3						5		2	
1765	J. Addison									4			
1765	W. Eilbeck			1									
1766	L. Butler									1			

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1766	E. Lawson									2			
1766	T. Clark			2						parcel			
1767	C. Clark			4									
1767	T. Hollyday			2						2	4		
1767	W. Newton			2						10	1		
1767	J. Brice												
1767	J. Stoddert			2				2		4			
1768	W. Webb			1								2	
1768	T. Tarpley	1	1	2						4			
1768	S. T. Marshall			1						2			
1768	J. Belt			2						parcel			
1768	T. Chinn			1						3		1	
1768	J. Edelin			1				1		3			
1769	H. Brent			2						5	5		
1769	Unknown												
1769	F. Waring			2						2			
1769	R. Chew			1								5	
1769	B. Smallwood	1		5					1	4			
1770	R. M. Hawkins			1									
1770	W. T. Stoddert			2						2	1		
1771	W. Hall			1			1			3			
1772	W. T. Stoddert												
1772	M Jacob			1						6			
1772	T. Hornsby												
1772	T. Hornsby												
1772	T. Hornsby	1		1									

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1772	T. Hornsby												
1772	D. French			2						8			
1773	C. Carroll, Jr.			1						1			
1773	J. Singleton			1						3			
1773	S. Pye			1									
1773	B. McCarty			2						2		2	
1773	J. Suggitt									4	1		
1774	J. Laidler	2		2						5	1		
1774	R. P. Downman			1						3		2	
1774	R. Wagener						1			3			
1774	J. Hepburn, Jr.	1		2						2	1	1	
1775	T. Addison	3		4						3	2		
1775	J. Hepburn, Sr.	1	2	6			1			3	1	5	
1776	J.F. Beall			1						2		1	
1776	N. Flood	2		2						15	1	5	
1776	P. L. Lee			4						2	2	7	
1777	A. Leitch			1						5	1		
1778	T. Truman											2	
1779	G. Maxwell			1						3		3	
1779	I. Lansdale			2						8			
1779	J. Key			1						7		2	
1779	G. Gant			1						4	3		
1779	J. Aderton			1						3			
1780	D. Ross			1			2			4			
1780	J. Carlyle			1						3		1	
1780	J. Carlyle			1			1			5	1		

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1780	P. P. Thornton			2			1			13		2	
1781	R. Downman			1						9		5	
1781	T. Skinner		1	2						3		1	
1781	W. Stott	2		2						8		2	
1781	R. Harrison	1		1						4			
1781	R. Mitchell	1		1						12		8	5
1782	T. MacGill			1						parcel			
1782	R. Gilmour						1			5	2		
1782	T. Fairfax			4	1	2	3			11	1	1	
1782	J. Montague	1		1						2		1	
1782	A. H. Magruder			1						2	2		
1782	J. Pu. Custis	2		2			2			9	1	2	
1783	M. Ball	1		2					1	4		2	
1783	J. Pemberton	1		1			1			3	2		
1783	H. Hilleary												
1784	T. Williams			2						2			
1784	J. Mills			1			1			1			
1784	H. Bradford			1						parcel			
1784	J. Coolidge			2			1			5	1		
1784	J. Scott			1			1			6			
1785	C. Lowndes			1			1			4			
1785	W. Glascock												
1785	T. Belt						1			2			
1785	R. Burgess									5		1	
1785	F. Hatfield			1						6	2		
1785	R. Brooke			1						4			

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harro ws	Yokes	Single Yokes
1785	B. Jameson			2						4			
1785	J. Hunter	1		2	1	4	9			13	1		
1785	G. T. Hawkins	1		1						2	1		
1786	E. Magruder		2	2						5			
1786	N. Magruder			1						3	2	1	
1786	T. Mason	1		2			2			5			
1787	B. Brookes	1		2						5	2		
1787	W. Williams	1		1			1			5	3		
1788	R. Duckett			1			2			11			
1789	R. Lee	3		4						8		6	
1789	W. Harrison			2						1		1	
1789	W. Clagett			2						10		2	
1789	J. Craine			1						3		1	
1789	R. Brown	1		1						3			
1789	J. Leland			1						2		2	

Table C6. Husbandry Tools Inventoried in Chesapeake Plantation Probates

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1741	S. Hanson	1				
1742	S. Ball					
1742	W. Scott					
1742	W. Ball, Jr.				1 pair	
1742	J. Samford					
1742	H. Fitzhugh					
1743	J. Washington			1		
1744	R. Osborn					
1744	R. Neale			1		
1745	F. Hammersley					
1745	T. Coleman, Sr.					
1746	F. Goodrick					
1746	Z. Wade					
1747	J. Ball					
1749	T. Lewis					
1749	T. Lewis					
1749	R. Traverse	1				
1749	R. Holmes					
1750	L. Griffin					
1750	B. Dudley					
1750	D. Hornby					
1750	J. Ball					
1751	W. Sydnor					
1751	H. H. Hawkins					
1750	S. Peachey					
1752	G. Glascock					
1752	M. Allein					
1752	J. Washington					
1752	R. Wiggenton	2				
1753	J. Greenham					
1753	W. Phillips		1			
1754	P. Alexander					
1753	B. McCarty					
1753	J. Minor					
1754	T. Barber					
1755	W. Montague					
1754	J. Ball					
1755	J. Clements					
1755	H. West					
1755	S. Ogle					
1756	J. S. Webb					
1756	S. Claget					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1756	J. Turley					
1756	J. Colvill					
1756	J. Glascock					
1757	W. Dent					
1758	M. Fauntleroy					
1758	J. Pile				1 pair	
1758	T. Lee					
1759	T. Cooke					
1759	W. Allerton					
1759	J. Nevison					
1760	G. Corbin					
1760	J. Wardrope					
1760	M. Barnes					
1760	A. Reade					
1761	E. Cole, Jr.			2		
1761	N. Chapman					
1761	T. Griffin					
1761	E. Addison					
1761	W. Bertrand					
1761	H. Mitchell					
1762	J. Bailey					
1762	G. Brown					
1762	H. Browne		1			
1763	W. Neale					
1763	A. Mason					
1763	D. Tebbs					
1763	E. Conway					
1763	W. Walker					
1764	H. Woodward					
1764	J. M. Semmes					
1764	J. Bond					
1763	J. Fendall					
1764	J. S. Hawkins					
1765	J. Addison					
1765	W. Eilbeck					
1766	L. Butler					
1766	E. Lawson					
1766	T. Clark					
1767	C. Clark					
1767	T. Hollyday					
1767	W. Newton					
1767	J. Brice					
1767	J. Stoddert				1 pair	
1768	W. Webb					
1768	T. Tarpley					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1768	S. T. Marshall	1				
1768	J. Belt					
1768	T. Chinn					
1768	J. Edelin					
1769	H. Brent					
1769	Unknown					
1769	F. Waring					
1769	R. Chew					
1769	B. Smallwood				1 pair	
1770	R. M. Hawkins					
1770	W. T. Stoddert					
1771	W. Hall					
1772	W. T. Stoddert					
1772	M. Jacob					
1772	T. Hornsby					
1772	T. Hornsby					
1772	T. Hornsby					
1772	T. Hornsby					
1772	D. French		5			
1773	C. Carroll, Jr.					
1773	J. Singleton					
1773	S. Pye					
1773	B. McCarty					
1773	J. Suggitt					
1774	J. Laidler					
1774	R. P. Downman		1			
1774	P. Wagener		5			
1774	J. Hepburn, Jr.					
1775	T. Addison					
1775	J. Hepburn, Sr.		3			
1776	J. F. Beall					
1776	N. Flood			1		
1776	P. L. Lee					1
1777	A. Leitch					
1778	T. Truman					
1779	G. Maxwell					
1779	I. Lansdale					
1779	J. Key					
1779	G. Gant					
1779	J. Aderton					
1780	D. Ross				1 pair	
1780	J. Carlyle					
1780	J. Carlyle		1			
1780	P. P. Thornton					
1781	R. Downman		1	1		

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1781	T. Skinner					
1781	W. Stott					
1781	R. Harrison					
1781	R. Mitchell					
1782	T. MacGill					
1782	R. Gilmour					
1782	T. Fairfax				1	
1782	J. Montague					
1782	A. H. Magruder					
1782	J. P. Custis					
1783	M. Ball					
1783	J. Pemberton					
1783	H. Hilleary					
1784	T. Williams					
1784	J. Mills					
1784	H. Bradford					
1784	J. Coolidge				15	
1784	J. Scott					
1785	C. Lowndes					
1785	W. Glascock					
1785	T. Belt					
1785	R. Burgess					
1785	F. Hatfield					
1785	R. Brooke					
1785	B. Jameson					
1785	J. Hunter					
1785	G. T. Hawkins					
1786	E. Magruder					
1786	N. Magruder	1				
1786	T. Mason					
1787	B. Brookes	1				
1787	W. Williams		1			
1788	R. Duckett					
1789	R. Lee					
1789	W. Harrison					
1789	W. Clagett					
1789	J. Craine					
1789	R. Brown			1		
1789	J. Leland					

Table C7. Probate Inventories Analyzed from Lowcountry Plantations

Date	Name	Plantation Name/ Planter?	Location
1739	Colonel Alexander Paris	Islington Plantation	Charleston
1739	Mr. John Rivers		St. Andrew's
1741	John Herbert		Goose Creek
1741	John Long		St. Paul's
1741	Catherine Snell		Goose Creek
1742	Mr. Joseph Barton		St. Andrew's
1742	Jonathan Wilson		Charleston
1742	Capt. John Cook		Charleston
1742	Col. William Sanders		St. George's
1742	John Guery		Santee
1743	Edward North	Horse Shoe	St. Paul's
1743	Edward North	Home Plantation	St. Paul's
1743	Edward North	Cowpen Hill Plantation	St. Paul's
1743	James Simsons	Planter	St. George's
1743	Josiah Baker	Plantation on Ashely River	Ashley River
1743	Josiah Baker	Plantation at Cow's Savannah	Ashley River
1743	James St. John	Pon Pon Plantation	Charleston
1743	James St. John	Kelley's Plantation	Charleston
1743	James St. John	Ashepoo Plantation	Charleston
1743	John Melvin		Charleston
1743	Robert Gray		Willtown
1743	Archibald Stobo		St. Paul's
1743	William Stobo		St. Andrew's
1743	Capt. William Stobo		St. Paul's
1743	Edward Keating		St. James, Goosecreek
1743	James Rotchford		Goose Creek
1745	Sarah Trott	Hagan Plantation	Charleston
1745	Richard Wright		Charleston
1745	Adam Lewis		St. John's, Berkeley
1746	William Ferguson	Planter	St. Paul's
1746	Noah Serre	Santee	St. James, Santee
1746	Abraham Saturday		St. James, Santee
1746	Phillip Peyre		St. James, Santee
1746	Daniel Townsend		Charleston
1747	Sarah Baker		St. George's
1747	John Daniell		Charleston
1748	James Vouloux		Charleston
1748	Peter Simons		St. Thomas & St. Dennis

Date	Name	Plantation Name/ Planter?	Location
1749	Charles Armstrong	Planter	St. Paul's
1749	Benjamin Godin	Spring Plantation	Goose Creek
1749	Benjamin Godin	Ashepoo	Goose Creek
1749	Benjamin Godin	Bryans Neck Plantation	Goose Creek
1749	Isaac Chandler		St. George's
1749	Thomas Palmer		Christ Church
1749	Benjamin Postell		St. George's
1750	William Porter		Christ Church
1750	Thomas Bulline		St. James, Goosecreek
1750	Martha McGregore		St. Thomas & St. Dennis
1750	John Splatt		St. Paul's
1751	William Chapman		St. Andrew's
1751	William Chapman	Southern Plantation	St. Andrew's
1751	Thomas Johnson	Awendaw Plantation	Charleston
1751	Elizabeth Clapp	Washaw Plantation	Charleston
1751	William Cattell, Jr.		Charleston
1751	William Cattell, Jr.	Savannah Plantation	Charleston
1751	Col. George Benison		Christ Church
1752	John Jeffords	Planter	St. Thomas's
1752	Isaac Grimball		St. Philip's
1752	Mark Oliver		Christ Church
1752	Robert Stevens		St. Paul's
1753	Thomas Cater		St. George's
1754	John Royer		Christ Church
1754	Isaac Waight		St. John's
1754	Joseph Waring		St. George's
1754	Thomas Waring		St. George's
1755	John Dart	Dartfield Plantation	Charleston
1755	Andrew Slam		St. George's
1755	Lt. Gov. William Bull		St. Andrew's
1755	David Hext		Charleston
1755	John Hutchins		St. Andrew's
1755	Capt. Thomas Porter		St. Paul's
1755	Daniel Dubose		St. James, Santee
1756	James McGaw	Planter	Christ Church
1756	Thomas Holman	Planter	St. Andrew's
1756	Edward Smith	Planter	Charleston
1756	Samuel Peronneau	Planter	Charleston
1756	John Rutledge	Plantation	Christ Church
1756	John Rutledge	Stono Plantation	Christ Church

Date	Name	Plantation Name/ Planter?	Location
1756	John Rutledge	Island Plantation	Christ Church
1756	Benjamin D'harriette	Plantation on John's Island	Charleston
1756	Thomas Winborn		St. John's
1756	Frances Downing		St. George's
1756	John Gendron, Jr.		St. James, Santee
1756	Philip Normand		St. James, Santee
1756	Thomas Crostwaite		Charleston
1756	Gideon Couterier		St. Stephen's
1756	Mrs. Mary Johns		St. John's
1756	Richard Waring		St. George's
1757	Francis Ladson	Planter	St. Andrew's
1757	Joseph Stone		St. Thomas
1757	Ribton Hutchinson	James Island	Charleston
1757	Solomon Milner	John's Island	Charleston
1757	Anthony Bonneau		St. Thomas
1758	John Ward		St. John's
1759	James Hartley	Hide Park Plantation	St. Paul's
1759	James Hartley	Plantation at Buck Hall	St. Paul's
1759	Bernard Elliot		Charleston
1761	Ralph Izard	Burton Plantation	Charleston
1761	Ralph Izard	Cows Savanna	Charleston
1761	Ralph Izard	Wassamasaw	Charleston
1761	Ralph Izard	Combahee	Charleston
1761	Ralph Izard	Near Combahee River	Charleston
1761	Ralph Izard	Tomotley Plantation	Charleston
1761	Thomas Elliott		St. Paul's
1761	Thomas Elliot, Sr.		St. Paul's
1761	William Anderson		St. John's
1761	Childermas Croft		Charleston
1761	John Hamilton		St. John's
1761	Rev. William Hutson		Charleston
1761	Rev. William Hutson		Charleston
1761	John Williams		St. Stephen's
1762	Samuel Spry		St. Paul's
1762	Mrs. Elizabeth Miller		St. George's
1762	Thomas Godfrey		St. Andrew's
1763	John Jones		Charleston
1763	Charles Lowndes		Charleston
1763	Elizabeth Akin		St. Philip's
1763	Ebenezer Simmons		Charleston

Date	Name	Plantation Name/ Planter?	Location
1764	William Miles	Plantation on Horse Savannah	St. Paul's
1764	William Miles	Plantation near Godfrey's Savanna	St. Paul's
1764	Andrew Johnston	Plantation on Charleston Neck	Charleston
1764	Nathan Cleave		St. Thomas
1764	Mary Russell		St. Thomas
1765	Robert Glass	Planter	St. Paul's
1765	Melchor Gardner	Planter	St. Paul's
1765	Joseph Anderson	Planter	St. James, Santee
1765	Peter Taylor	Plantation on Goosecreek	Goose Creek
1765	Peter Taylor	Warhouse Plantation	St. Paul's
1765	Frances LeJau	Late Plantation	St. John's
1765	Frances LeJau	Winyan Plantation	St. John's
1765	William Raven		Charleston
1765	Elizabeth Snipes		St. Paul's
1765	Philip Spooler		St. Paul's
1765	John Clifford		Charleston
1765	Capt. John Blaymer		St. Paul's
1765	Alexander Broughton		St. John's, Berkeley
1765	Samuel Little		St. John's, Berkeley
1765	John McGowen		St. John's
1766	Robert Hume	Goose Creek	Charleston
1766	Robert Hume	Old Plantation	Charleston
1766	Robert Hume	Santee	Charleston
1766	Maurice Harvey		St. George's
1767	James Mathews	Planter	St. Philip's
1767	William Elliot		Charleston
1767	William Elliot	Ferry Path Plantation	Charleston
1767	William Elliot	Horse Savannah Plantation	Charleston
1767	William Elliot	Wiltown Plantation	Charleston
1767	William Elliot	Bare Island	Charleston
1767	William Elliot	Roterdam Plantation	Charleston
1767	William Elliot	Newholland Plantation	Charleston
1767	William Elliot	Newhan Plantation	Charleston
1767	Capt. Silas Miles		Charleston
1767	Benjamin Backhouse		Charleston
1767	Jean Dumay		St. James, Santee
1767	Francis Perry		Charleston
1767	Capt. William Vanderhorst		Christ Church
1768	George Marshall	Planter	St. Philip's
1768	James Streator, Sr.		St. James, Goosecreek

Date	Name	Plantation Name/ Planter?	Location
1768	Michael Geiger		St. George's
1768	William Joor		St. George's
1768	John Govan		Charleston
1768	John Lewis		St. James
1768	Capt. Nicholas Harleston		St. John's, Berkeley
1768	Barnaby Branford		St. George's
1769	George Seaman	Tupilo & Cypress Plantation	St. Philip's
1769	George Seaman	Thorogood Plantation	St. James, Goosecreek
1769	John Rivers		St. Andrew's
1769	James Reid	Horse Shoe	Charleston
1769	Matthew Hardy		St. John's
1769	John Cattell		St. George's
1770	John Edwards	Planter	St. George's
1770	William Williams	at his Plantation	Charleston
1770	Ebenezer Simmons	Plantation in St. Andrew's	St. Andrew's
1770	Jacob Motte Sr.		Charleston
1771	John McKenzie	Plantation on Waccamaw	Charleston
1771	John McKenzie	Plantation on Peedee	Charleston
1771	John McKenzie	Goose Creek	Charleston
1771	William Hart		St. George's
1771	Benjamin Smith		Charleston
1771	John Baxter		St. George's
1772	Rev. John Thomas	James Island Plantaion	Charleston
1772	Alexander Chisolme		Christ Church
1772	Henry Guerin		St. Thomas & St. Dennis
1772	Stephen Guerry		St. James, Santee
1772	Basil Hallum		St. Paul's
1772	Rev. John Maltby		St. Paul's
1772	Robert Quash		St. Thomas & St. Dennis
1772	Mathias Sellers		St. Paul's
1772	Benjamin Simons		St. Thomas's
1772	Mrs. Ann Videau		St. Thomas
1772	William Young		St. George's
1772	Mrs. Catherine Croll		St. Paul's
1772	Sarah Clayton		St. George's
1772	James Fowler		Charleston
1772	Richard Beresford		Charleston
1773	Jonathan Fowler	Planter	Christ Church
1773	Joseph Fabian	Planter	St. Paul's
1773	Josiah Perry	Ponpon Plantation	St. Paul's

Date	Name	Plantation Name/ Planter?	Location
1773	Josiah Perry	Round O Plantation	St. Paul's
1773	John Prue	Plantation up the Path	Charleston
1773	Dr. Thomas Caw	Plantation on Santee	Charleston
1773	James Postell	Ashepoo Plantation	St. George's
1773	James Postell	Horseshoe Plantation	St. George's
1773	James Postell	Around O Plantation	St. George's
1773	James Postell	Platnation in St. George's	St. George's
1773	Isaac Nichols		St. Paul's
1773	Rev. John Tonge		Charleston
1773	Archibald Stanyarne		Charleston
1773	William Joy		Christ Church
1774	James Atkins	Planter	Charleston
1774	John Starling	Planter	Charleston
1774	John Chicken	Planter	St. James, Santee
1774	Thomas Holman	Planter	St. Andrew's
1774	Mrs. Rebecca Singleton	Foxbank Plantation	Goose Creek
1774	George Austin	Plantation at Ashepoo	Charleston
1774	George Austin	Plantation at Peedee	Charleston
1774	Peter Alexander		St. Paul's
1774	Peter Manigault		Goose Creek
1774	Peter Manigault		Goose Creek
1774	Peter Manigault		Goose Creek
1774	William Miles		St. Andrew's
1774	Lewis Mouzon		St. James, Santee
1774	Richard Capers		Christ Church
1774	James McLaughling		St. Paul's
1774	Edward Miles		St. Andrew's
1775	Daniel Ravenel, Sr.	Planter	St. John's
1775	James Simmons	Plantation on John's Island	Charleston
1775	William Johnston	Plantation on Long Bay	St. Paul's
1775	John Jennens		St. John's, Santee
1775	Mrs. Sarah Elliot		St. Andrew's
1775	Mrs. Sarah Elliot		St. Andrew's
1775	Hugh Brown		Charleston
1775	Thomas Hopkins		St. John's
1775	Peter Gourdin		St. John's
1775	Capt. Thomas Bull		Willtown
1776	Col. Stephen Miller		St. Thomas
1776	John Wells		St. Paul's
1777	John Nisbet	Dean Hall Plantation	St. John's

Date	Name	Plantation Name/ Planter?	Location
1777	William Sanders	Reveley Plantation	St. George's
1777	William Sanders	Cypress Plantation	St. George's
1777	William Sanders	Dorchester	St. George's
1777	Mrs. Mary Milner		Christ Church
1777	James McKelvy		St. John's, Berkeley
1777	Sir. John Colleton		Charleston
1777	Barnard Deyoung		Charleston
1777	Sedgwick Lewis		St. James, Goosecreek
1777	Dr. William Roberts		Charleston
1777	John Boone		Christ Church
1778	William Chicken	Planter	St. James, Santee
1779	William Wragg	River Settlement Plantation	Charleston
1779	William Wragg	Middle Settlement Plantation	Charleston
1779	William Wragg	Plantation called Wapee	Charleston
1779	James Parsons	Kilkenny Plantation	St. Paul's
1779	James Parsons	Winnoes Plantation	St. Paul's
1779	James Parsons	Roscommon Plantation	Charleston
1779	George Sommers		St. Paul's
1780	Mrs. Mary Stanyarne		St. Paul's
1781	James Akin	Mount Liberty Plantation	St. Thomas's
1781	William Holiday	Richmond Plantation	Goose Creek
1781	William Loocok	Plantation	Charleston
1781	David Gaillard		St. Stephen's
1781	Mathurin Guerin		St. Andrew's
1781	James Roulain		St. Thomas & St. Dennis
1781	Philip Spooler		St. Paul's
1781	Miss Mary Ladson		St. Andrew's
1781	Francis Yonge, Sr.		St. Paul's

Table C8. Oxen Inventoried from Lowcountry Plantation Probates

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1739	A. Paris	6					6	26
1739	J. Rivers							82.5
1741	J. Herbert							24
1741	J. Long							10
1741	C. Snell							11
1742	J. Barton							21
1742	J. Wilson							16
1742	J. Cook							66
1742	W. Sanders	24					24	132
1742	J. Guery							5
1743	E. North							25
1743	E. North							26
1743	E. North							19
1743	J. Simsons							9
1743	J. Baker							72
1743	J. Baker	11					11	11
1743	J. St. John							26
1743	J. St. John							26
1743	J. St. John							26
1743	J. Melvin							25
1743	R. Gray							15
1743	A. Stobo							55
1743	W. Stobo	6					6	31
1743	W. Stobo							40
1743	E. Keating	37					37	180
1743	J. Rotchford							45
1745	S. Trott					16	16	80
1745	R. Wright	11					11	101
1745	A. Lewis							24
1746	W. Ferguson							17
1746	N. Serre	8					8	167
1746	A. Saturday							101
1746	P. Peyre	12					12	78
1746	D. Townsend							stock
1747	S. Baker							5
1747	J. Daniell							29

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1748	J. Vouloux							30
1748	P. Simons					15	15	55
1749	C. Armstrong							23
1749	B. Godin					15	15	80
1749	B. Godin							159
1749	B. Godin							13
1749	I. Chandler							25
1749	T. Palmer							3
1749	B. Postell					6	6	24
1750	W. Porter							20
1750	T. Bulline							
1750	M. McGregore							30
1750	J. Splatt							stock
1751	W. Chapman							11
1751	W. Chapman							40
1751	T. Johnson					8	8	22
1751	E. Clapp							
1751	W. Cattell, Jr.							90
1751	W. Cattell, Jr.							13
1751	G. Benison							62
1752	J. Jeffords							9
1752	I. Grimball							10
1752	M. Oliver							12
1752	R. Stevens							68
1753	T. Cater	5					5	76
1754	J. Royer							13
1754	I. Waight					8	8	139
1754	J. Waring							13
1754	T. Waring					13	13	56
1755	J. Dart					4	4	51
1755	A. Slam					9	9	100
1755	W. Bull					8	8	207
1755	D. Hext							25
1755	J. Hutchins							31
1755	T. Porter					9	9	34
1755	D. Dubose							33
1756	J. McGaw							17
1756	T. Holman							115

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1756	E. Smith							33
1756	S. Peronneau							92
1756	J. Rutledge					10	10	65
1756	J. Rutledge							60
1756	J. Rutledge							64
1756	B. D'harriette					10	10	85
1756	T. Winborn							23
1756	F. Downing					14	14	108
1756	J. Gendron, Jr.	9					9	28
1756	P. Normand							47
1756	T. Crostwaite							25
1756	G. Couterier							12
1756	M. Johns							15
1756	R. Waring	21					21	93
1757	F. Ladson							24
1757	J. Stone							18
1757	R. Hutchinson					15	15	55
1757	S. Milner							34
1757	A. Bonneau	17					17	63
1758	J. Ward	5					5	49
1759	J. Hartley					21	21	50
1759	J. Hartley	21					21	98
1759	B. Elliot					24	24	59
1761	R. Izard					18	18	218
1761	R. Izard					26	26	123
1761	R. Izard					16	16	280
1761	R. Izard	24					24	536
1761	R. Izard							
1761	R. Izard	16					16	82
1761	T. Elliott					87	87	203
1761	T. Elliot, Sr.							50
1761	W. Anderson							26
1761	C. Croft							32
1761	J. Hamilton							80
1761	W. Hutson					12	12	111
1761	W. Hutson					8	8	161
1761	J. Williams							200
1762	S. Spry							37

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1762	E. Miller							30
1762	T. Godfrey							30
1763	J. Jones					8	8	39
1763	C. Lowndes	14					14	74
1763	E. Akin					15	15	49
1763	E. Simmons							25
1764	W. Miles					14	14	54
1764	W. Miles							9
1764	A. Johnston							
1764	N. Cleave							8
1764	M. Russell					4	4	34
1765	R. Glass	9					9	46
1765	M. Gardner					10	10	19
1765	J. Anderson							stock
1765	P. Taylor					17	17	98
1765	P. Taylor					14	14	87
1765	F. LeJau	16					16	69
1765	F. LeJau					8	8	31
1765	W. Raven	24					24	165
1765	E. Snipes							43
1765	P. Spooler					10	10	52
1765	J. Clifford							12
1765	J. Blaymer							24
1765	A. Broughton					30	30	108
1765	S. Little							stock
1765	J. McGowen							50
1766	R. Hume							
1766	R. Hume					20	20	170
1766	R. Hume					7	7	26
1766	M. Harvey							8
1767	J. Mathews							
1767	W. Elliot							54
1767	W. Elliot							63
1767	W. Elliot					18	18	65
1767	W. Elliot							
1767	W. Elliot							152
1767	W. Elliot							
1767	W. Elliot							17

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1767	W. Elliot					6	6	46
1767	S. Miles					12	12	59
1767	B. Backhouse							7
1767	J. Dumay							3
1767	F. Perry							9
1767	W. Vanderhorst					6	6	65
1768	G. Marshall							14
1768	J. Streator, Sr.							13
1768	M. Geiger					9	9	83
1768	W. Joor							8
1768	J. Govan							39
1768	J. Lewis							25
1768	N. Harleston					27	27	35
1768	B. Branford					3	3	50
1769	G. Seaman	12					12	129
1769	G. Seaman	55					55	244
1769	J. Rivers							15
1769	J. Reid	7					7	60
1769	M. Hardy							38
1769	J. Cattell					15	15	102
1770	J. Edwards	7					7	27
1770	W. Williams							34
1770	E. Simmons					29	29	81
1770	J. Motte Sr.							15
1771	J. McKenzie					6	6	31
1771	J. McKenzie					8	8	31
1771	J. McKenzie					10	10	42
1771	W. Hart							
1771	B. Smith							25
1771	J. Baxter							21
1772	J. Thomas							15
1772	A. Chisolme							20
1772	H. Guerin					9	9	21
1772	S. Guerry					4	4	64
1772	B. Hallum							8
1772	J. Maltby							10
1772	R. Quash	49					49	200
1772	M. Sellers							44

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1772	B. Simons	35					35	158
1772	A. Videau	3					3	13
1772	W. Young							1200
1772	C. Croll					10	10	34
1772	S. Clayton							22
1772	J. Fowler							46
1772	R. Beresford							10
1773	J. Fowler							4
1773	J. Fabian					16	16	134
1773	J. Perry	8					8	78
1773	J. Perry	13					13	64
1773	J. Prue							14
1773	T. Caw							16
1773	J. Postell					46	46	134
1773	J. Postell	20					20	107
1773	J. Postell							15
1773	J. Postell					11	11	54
1773	I. Nichols					51	51	247
1773	J. Tonge					14	14	39
1773	A. Stanyarne					28	28	120
1773	W. Joy							
1774	J. Atkins							31
1774	J. Starling							6
1774	J. Chicken							10
1774	T. Holman					12	12	25
1774	R. Singleton							
1774	G. Austin					12	12	66
1774	G. Austin	11					11	34
1774	P. Alexander							
1774	P. Manigault	13					13	109
1774	P. Manigault							40
1774	P. Manigault							19
1774	W. Miles					5	5	11
1774	L. Mouzon							18
1774	R. Capers							stock
1774	J. McLaughling	5					5	47
1774	E. Miles					2	2	16
1775	D. Ravenel, Sr.	30			8		38	100

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1775	J. Simmons							200
1775	W. Johnston					10	10	90
1775	J. Jennens					3	3	31
1775	S. Elliot							26
1775	S. Elliot				4	2	6	76
1775	H. Brown							12
1775	T. Hopkins							24
1775	P. Gourdin					6	6	101
1775	T. Bull							6
1776	S. Miller					12	12	35
1776	J. Wells							
1777	J. Nisbet	32					32	97
1777	W. Sanders							33
1777	W. Sanders					24	24	64
1777	W. Sanders							16
1777	M. Milner							6
1777	J. McKelvy							480
1777	J. Colleton	35					35	129
1777	B. Deyoung	5					5	86
1777	S. Lewis							132
1777	W. Roberts					6	6	7
1777	J. Boone				6		6	80
1778	W. Chicken							27
1779	W. Wragg							174
1779	W. Wragg							
1779	W. Wragg							
1779	J. Parsons	10					10	61
1779	J. Parsons	9					9	73
1779	J. Parsons							22
1779	G. Sommers					43	43	100
1780	M. Stanyarne							9
1781	J. Akin	7					7	32
1781	W. Holiday							18
1781	W. Loocok	6					6	21
1781	D. Gaillard	6					6	23
1781	M. Guerin							3
1781	J. Roulain							24
1781	P. Spooler							7

Date	Name	Working Oxen/ Steers	Draft Oxen/ Steers	Plow Oxen	Stall-Fed Oxen	"Oxen"	Total Number of Oxen	Total Number of Cattle
1781	M. Ladson					4	4	9
1781	F. Yonge, Sr.							93

Table C9. Equines Inventoried in Lowcountry Plantation Probates

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1739	A. Paris											
1739	J. Rivers										3	
1741	J. Herbert											
1741	J. Long										1	
1741	C. Snell										1	
1742	J. Barton										2	
1742	J. Wilson										4	
1742	J. Cook										10	
1742	W. Sanders										13	
1742	J. Guerv										2	
1743	E. North										3	
1743	E. North										6	
1743	E. North										3	
1743	J. Simsons										2	
1743	J. Baker			1							8	
1743	J. Baker											
1743	J. St. John										4	
1743	J. St. John										17	
1743	J. St. John										1	
1743	J. Melvin											
1743	R. Grav										4	
1743	A. Stobo										6	
1743	W. Stobo											
1743	W. Stobo										4	
1743	E. Keating										23	
1743	J. Rotchford										2	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1745	S. Trott										7	
1745	R. Wright									6	23	
1745	A. Lewis										3	
1746	W. Ferguson										4	
1746	N. Serre										parcel	
1746	A. Saturday	1		5							24	
1746	P. Peyre	1									8	
1746	D. Townsend										stock	
1747	S. Baker										6	
1747	J. Daniell		1								12	
1748	J. Vouloux										5	
1748	P. Simons										4	
1749	C. Armstrong										4	
1749	B. Godin			2		4					23	
1749	B. Godin										18	
1749	B. Godin											
1749	I. Chandler										36	
1749	T. Palmer										12	
1749	B. Postell										8	
1750	W. Porter										2	
1750	T. Bulline										14	
1750	M. McGregore										3	
1750	J. Splatt										stock	
1751	W. Chapman										2	
1751	W. Chapman											
1751	T. Johnson										16	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1751	E. Clapp											
1751	W. Cattell, Jr.	2									30	
1751	W. Cattell, Jr.											
1751	G. Benison										22	
1752	J. Jeffords										3	
1752	I. Grimball										3	
1752	M. Oliver			1							10	
1752	R. Stevens										5	
1753	T. Cater										15	
1754	J. Rover										3	
1754	I. Waight										32	
1754	J. Waring										5	
1754	T. Waring										3	
1755	J. Dart										10	
1755	A. Slam										19	
1755	W. Bull			2	2						39	
1755	D. Hext	1									6	
1755	J. Hutchins										16	
1755	T. Porter										24	
1755	D. Dubose										6	
1756	J. McGaw										6	
1756	T. Holman	6									40	
1756	E. Smith										5	
1756	S. Peronneau		1								7	
1756	J. Rutledge											
1756	J. Rutledge										10	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1756	J. Rutledge										3	
1756	B. D'harriette										17	
1756	T. Winborn										5	
1756	F. Downing										11	
1756	J. Gendron, Jr.										6	
1756	P. Normand										3	
1756	T. Crostwaite										6	
1756	G. Couterier										1	
1756	M. Johns											
1756	R. Waring										14	
1757	F. Ladson										7	
1757	J. Stone										3	
1757	R. Hutchinson		1								15	
1757	S. Milner										7	
1757	A. Bonneau	1									17	
1758	J. Ward	8									18	
1759	J. Hartley										13	
1759	J. Hartley										26	
1759	B. Elliot										8	
1761	R. Izard										11	
1761	R. Izard										9	
1761	R. Izard										13	
1761	R. Izard										17	
1761	R. Izard											
1761	R. Izard										8	
1761	T. Elliott										60	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1761	T. Elliot, Sr.										19	
1761	W. Anderson										8	
1761	C. Croft									5	10	
1761	J. Hamilton										8	
1761	W. Hutson	3									30	
1761	W. Hutson										12	
1761	J. Williams										22	
1762	S. Spry										10	
1762	E. Miller										8	
1762	T. Godfrey		1								4	
1763	J. Jones		1								17	
1763	C. Lowndes	2									24	
1763	E. Akin										7	
1763	E. Simmons										4	
1764	W. Miles										15	
1764	W. Miles											
1764	A. Johnston		1	3							4	
1764	N. Cleave										3	
1764	M. Russell											
1765	R. Glass										10	
1765	M. Gardner										18	
1765	J. Anderson										4	
1765	P. Taylor										19	
1765	P. Taylor										32	
1765	F. LeJau										13	
1765	F. LeJau											

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1765	W. Raven										16	
1765	E. Snipes										11	
1765	P. Spooler										15	
1765	J. Clifford										9	
1765	J. Blaymer										10	
1765	A. Broughton										62	
1765	S. Little										stock	
1765	J. McGowen	13									38	
1766	R. Hume										7	
1766	R. Hume			2							25	
1766	R. Hume										6	
1766	M. Harvey		1	3							5	
1767	J. Mathews											
1767	W. Elliot										7	
1767	W. Elliot											
1767	W. Elliot											
1767	W. Elliot											
1767	W. Elliot										14	
1767	W. Elliot											
1767	W. Elliot											
1767	W. Elliot										1	
1767	S. Miles	1									18	
1767	B. Backhouse		1	1							8	
1767	J. Dumay										3	
1767	F. Perry										2	
1767	W. Vanderhorst	3	1	1							10	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1768	G. Marshall										2	
1768	J. Streator. Sr.										3	
1768	M. Geiger										13	
1768	W. Joor										7	
1768	J. Govan	3									3	
1768	J. Lewis										5	
1768	N. Harleston			1							16	
1768	B. Branford										8	
1769	G. Seaman										3	
1769	G. Seaman		1								36	
1769	J. Rivers										2	
1769	J. Reid										15	
1769	M. Hardy										5	
1769	J. Cattell										47	
1770	J. Edwards	1		1							3	
1770	W. Williams										9	
1770	E. Simmons										4	
1770	J. Motte Sr.										1	
1771	J. McKenzie										8	
1771	J. McKenzie										10	
1771	J. McKenzie				5						16	
1771	W. Hart										5	
1771	B. Smith										5	
1771	J. Baxter										6	
1772	J. Thomas										3	
1772	A. Chisolme										8	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1772	H. Guerin										5	
1772	S. Guerry	1									4	
1772	B. Hallum										3	
1772	J. Maltby										2	
1772	R. Quash										19	
1772	M. Sellers										2	
1772	B. Simons										10	
1772	A. Videau										1	
1772	W. Young										58	
1772	C. Croll										10	
1772	S. Clayton											
1772	J. Fowler										4	
1772	R. Beresford						4				40	2
1773	J. Fowler										8	
1773	J. Fabian										11	
1773	J. Perry										17	
1773	J. Perry										9	
1773	J. Prue		1								2	
1773	T. Caw	2	7								22	
1773	J. Postell										31	
1773	J. Postell										9	
1773	J. Postell										2	
1773	J. Postell										8	
1773	I. Nichols										20	
1773	J. Tonge										21	
1773	A. Stanyarne		1								25	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1773	W. Joy										5	
1774	J. Atkins										1	
1774	J. Starling											
1774	J. Chicken										3	
1774	T. Holman										5	
1774	R. Singleton		2								2	
1774	G. Austin										10	
1774	G. Austin										13	
1774	P. Alexander										10	
1774	P. Manigault						1				12	
1774	P. Manigault										4	
1774	P. Manigault										4	
1774	W. Miles										4	
1774	L. Mouzon										7	
1774	R. Capers										stock	
1774	J. McLaughling										9	
1774	E. Miles										4	
1775	D. Ravenel, Sr.										34	
1775	J. Simmons										15	
1775	W. Johnston										8	
1775	J. Jennens										4	
1775	S. Elliot										6	
1775	S. Elliot										7	
1775	H. Brown										7	
1775	T. Hopkins			1							8	
1775	P. Gourdin										24	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1775	T. Bull	2									6	
1776	S. Miller										11	
1776	J. Wells										4	
1777	J. Nisbet										8	
1777	W. Sanders										5	
1777	W. Sanders										9	
1777	W. Sanders										3	
1777	M. Milner										1	
1777	J. McKelvv										stock	
1777	J. Colleton	1			1				2		54	
1777	B. Devoung										28	
1777	S. Lewis										18	
1777	W. Roberts										4	
1777	J. Boone										11	
1778	W. Chicken										2	
1779	W. Wragg										24	
1779	W. Wragg											
1779	W. Wragg											
1779	J. Parsons											
1779	J. Parsons										1	
1779	J. Parsons							4			4	
1779	G. Sommers		2								20	
1780	M. Stanvarne										3	
1781	J. Akin										12	
1781	W. Holidav										6	
1781	W. Loocok										6	

Date	Name	Riding Horses	Chair Horses	Cart Horses	Coach Horses	Phaeton Horses	Wagon Horses	Plow Horses	Draft Horses	Work Horses	Total Horses	Jack Asses
1781	D. Gaillard										10	
1781	M. Guerin										2	
1781	J. Roulain										1	
1781	P. Spooler										8	
1781	M. Ladson										7	
1781	F. Yonge, Sr.										6	

Table C10. Equine-Specific Vehicles and Equipment Inventoried in Lowcountry Plantation Probates

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1739	A. Paris						1	
1739	J. Rivers						2	1
1741	J. Herbert							
1741	J. Long						1	
1741	C. Snell						1	
1742	J. Barton							
1742	J. Wilson						1	2
1742	J. Cook						2	2
1742	W. Sanders		1			1		
1742	J. Guery						1	
1743	E. North							
1743	E. North						3	
1743	E. North							
1743	J. Simsons						1	
1743	J. Baker		1			1		
1743	J. Baker							
1743	J. St. John						1	1
1743	J. St. John					3		
1743	J. St. John							
1743	J. Melvin							
1743	R. Gray						2	1
1743	A. Stobo						1	1
1743	W. Stobo					1		
1743	W. Stobo							
1743	E. Keating							
1743	J. Rotchford						2	4
1745	S. Trott						1	
1745	R. Wright						lot	lot
1745	A. Lewis						1	1
1746	W. Ferguson						2	
1746	N. Serre						5	5
1746	A. Saturday		1			1	3	
1746	P. Peyre						2	4
1746	D. Townsend							

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae- tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1747	S. Baker							
1747	J. Daniell		1				2	
1748	J. Vouloux		1			1	1	
1748	P. Simons							
1749	C. Armstrong						2	
1749	B. Godin			1	1	8	1	1
1749	B. Godin						2	
1749	B. Godin							
1749	I. Chandler		1				1	
1749	T. Palmer						1	
1749	B. Postell						3	
1750	W. Porter						2	
1750	T. Bulline						2	
1750	M. McGregore							
1750	J. Splatt		1			1	1	1
1751	W. Chapman		1			1		
1751	W. Chapman							
1751	T. Johnson						3	3
1751	E. Clapp							
1751	W. Cattell, Jr.					1		
1751	W. Cattell, Jr.							
1751	G. Benison							
1752	J. Jeffords							
1752	I. Grimball						2	2
1752	M. Oliver						2	
1752	R. Stevens							
1753	T. Cater		1				2	
1754	J. Royer						3	
1754	I. Waight					1	3	1
1754	J. Waring						1	
1754	T. Waring		1				1	
1755	J. Dart							
1755	A. Slam		1	1		2	5	3
1755	W. Bull	1			1		4	
1755	D. Hext						1	1
1755	J. Hutchins						1	1
1755	T. Porter		2			2	1	
1755	D. Dubose						1	

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1756	J. McGaw						2	
1756	T. Holman							
1756	E. Smith						1	1
1756	S. Peronneau							
1756	J. Rutledge							
1756	J. Rutledge							
1756	J. Rutledge							
1756	B. D'harriette							
1756	T. Winborn						3	1
1756	F. Downing		1			1		
1756	J. Gendron, Jr.		1			1	1	
1756	P. Normand							
1756	T. Crostwaite		1			1	1	
1756	G. Couterier						1	1
1756	M. Johns							
1756	R. Waring		1				2	2
1757	F. Ladson							
1757	J. Stone							
1757	R. Hutchinson		1			1	1	
1757	S. Milner							
1757	A. Bonneau		1			1	5	several
1758	J. Ward		1			1		
1759	J. Hartley							
1759	J. Hartley		2			1	1	
1759	B. Elliot							
1761	R. Izard							
1761	R. Izard						2	2
1761	R. Izard						1	1
1761	R. Izard						2	3
1761	R. Izard							
1761	R. Izard						1	1
1761	T. Elliott						parcel	parcel
1761	T. Elliot, Sr.							
1761	W. Anderson						2	
1761	C. Croft		1					
1761	J. Hamilton						2	
1761	W. Hutson		2			1	4	2
1761	W. Hutson							

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae- tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1761	J. Williams						4	
1762	S. Spry		1			1	3	2
1762	E. Miller						1	
1762	T. Godfrey		1					
1763	J. Jones							
1763	C. Lowndes		1				4	
1763	E. Akin		1			1		
1763	E. Simmons		1			1		
1764	W. Miles		1				1	
1764	W. Miles							
1764	A. Johnston		1				2	
1764	N. Cleave						2	
1764	M. Russell		1			1		
1765	R. Glass							
1765	M. Gardner		1			1	3	
1765	J. Anderson						5	2
1765	P. Taylor		2			2	2	2
1765	P. Taylor							
1765	F. LeJau		1			1	1	1
1765	F. LeJau							
1765	W. Raven		4			8	5	1
1765	E. Snipes		1					
1765	P. Spooler		1			1	4	
1765	J. Clifford		3			1		
1765	J. Blaymer						3	
1765	A. Broughton		2			2	2	
1765	S. Little						3	2
1765	J. McGowen		1				2	2
1766	R. Hume		2		1	2	5	5
1766	R. Hume							
1766	R. Hume							
1766	M. Harvey		1			1		
1767	J. Mathews		1			1		
1767	W. Elliot		1			1		
1767	W. Elliot							
1767	W. Elliot							
1767	W. Elliot							
1767	W. Elliot							

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae- tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1767	W. Elliot							
1767	W. Elliot							
1767	W. Elliot							
1767	S. Miles		1				1	1
1767	B. Backhouse	1	2			2	3	3
1767	J. Dumay							
1767	F. Perry					3	1	
1767	W. Vanderhorst		2				2	
1768	G. Marshall		1		1	1	1	1
1768	J. Streator, Sr.		1				2	1
1768	M. Geiger		1			1		
1768	W. Joor						2	
1768	J. Govan						1	
1768	J. Lewis						1	1
1768	N. Harleston		1			1	1	1
1768	B. Branford		1			1	4	
1769	G. Seaman							
1769	G. Seaman							
1769	J. Rivers		1			1	1	1
1769	J. Reid							
1769	M. Hardy		2					
1769	J. Cattell		1				2	2
1770	J. Edwards						3	1
1770	W. Williams							
1770	E. Simmons							
1770	J. Motte Sr.		2				2	
1771	J. McKenzie							
1771	J. McKenzie							
1771	J. McKenzie		1		1	5		
1771	W. Hart						2	
1771	B. Smith		2		1			
1771	J. Baxter							
1772	J. Thomas						1	
1772	A. Chisolme							
1772	H. Guerin						3	3
1772	S. Guerry						2	
1772	B. Hallum							1
1772	J. Maltby						1	

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1772	R. Quash		2			2	2	2
1772	M. Sellers		1					
1772	B. Simons		2			2	3	3
1772	A. Videau		1					
1772	W. Young						4	
1772	C. Croll		1			1		
1772	S. Clayton							
1772	J. Fowler		1			1		
1772	R. Beresford		4			3	4	1
1773	J. Fowler						1	1
1773	J. Fabian		2			1	5	
1773	J. Perry		3			1	4	
1773	J. Perry							
1773	J. Prue		2			2	2	
1773	T. Caw							
1773	J. Postell							
1773	J. Postell							
1773	J. Postell							2
1773	J. Postell		1		1	1	3	3
1773	I. Nichols							
1773	J. Tonge		3			2	4	
1773	A. Stanyarne		2					
1773	W. Joy		1			1	1	2
1774	J. Atkins							
1774	J. Starling							
1774	J. Chicken						1	2
1774	T. Holman							
1774	R. Singleton							
1774	G. Austin						1	
1774	G. Austin						1	1
1774	P. Alexander						3	
1774	P. Manigault		1				4	2
1774	P. Manigault							
1774	P. Manigault							
1774	W. Miles		1			1	2	
1774	L. Mouzon		1			1	6	
1774	R. Capers		1				lot	
1774	J. McLaughling						3	

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness-es	Saddles	Bridles
1774	E. Miles							
1775	D. Ravenel, Sr.		2	1	1	8	4	
1775	J. Simmons		1					
1775	W. Johnston						2	2
1775	J. Jennens		1					
1775	S. Elliot		3			3	1	
1775	S. Elliot						1	
1775	H. Brown						2	
1775	T. Hopkins		1			1	2	1
1775	P. Gourdin		2				3	3
1775	T. Bull							
1776	S. Miller		2			3	1	
1776	J. Wells							
1777	J. Nisbet							
1777	W. Sanders							
1777	W. Sanders							
1777	W. Sanders		2					
1777	M. Milner							
1777	J. McKelvy			1		4	1	1
1777	J. Colleton			1	1	6	3	
1777	B. Deyoung		1			1	2	
1777	S. Lewis		1			1	3	3
1777	W. Roberts		1				1	1
1777	J. Boone						1	
1778	W. Chicken		1			1	1	1
1779	W. Wragg							
1779	W. Wragg							
1779	W. Wragg							
1779	J. Parsons							
1779	J. Parsons							
1779	J. Parsons						1	1
1779	G. Sommers		2			1		
1780	M. Stanyarne							
1781	J. Akin		2				1	1
1781	W. Holiday							
1781	W. Loocok		1			1	2	
1781	D. Gaillard							
1781	M. Guerin							

Date	Name	Drays	Chairs/ Chaises/ Sulkies	Phae-tons	Coaches/ Carriages/ Chariots	Harness -es	Saddles	Bridles
1781	J. Roulain		1			2		
1781	P. Spooler		1			1	1	1
1781	M. Ladson		1			1		
1781	F. Yonge, Sr.							

Table C11. Agricultural Equipment Inventoried in Lowcountry Plantation Probates

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1739	B. Paris	1		1						1		1	
1739	J. Rivers			1									
1741	J. Herbert												
1741	J. Long												
1741	C. Snell												
1742	J. Barton												
1742	J. Wilson												
1742	J. Cook												
1742	W. Sanders			2						1		2	
1742	J. Guery												
1743	E. North												
1743	E. North												
1743	E. North												
1743	J. Simsons												
1743	J. Baker		1	1									
1743	J. Baker	1		1								1	
1743	J. St. John												
1743	J. St. John			1									
1743	J. St. John												
1743	J. Melvin												
1743	R. Gray												
1743	A. Stobo												
1743	W. Stobo			1								5	
1743	W. Stobo												
1743	E. Keating			2						2		2	
1743	J. Rotchford												

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1745	S. Trott											1	
1745	R. Wright	1	1	2								4	
1745	A. Lewis												
1746	W. Ferguson												
1746	N. Serre												
1746	A. Saturday			2									
1746	P. Peyre			1								1	
1746	D. Townsend												
1747	S. Baker												
1747	J. Daniell	1	1	2									
1748	J. Vouloux												
1748	P. Simons											3	
1749	C. Armstrong												
1749	B. Godin	1	2	3						4			
1749	B. Godin											8	
1749	B. Godin												
1749	I. Chandler		2	2									
1749	T. Palmer			1									
1749	B. Postell			1									
1750	W. Porter												
1750	T. Bulline	1		1								1	
1750	M. McGregore												
1750	J. Splatt		2	2									
1751	W. Chapman												
1751	W. Chapman												
1751	T. Johnson											6	

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1751	E. Clapp												
1751	W. Cattell. Jr.			1								3	
1751	W. Cattell, Jr.	1	1	2									
1751	G. Benison												
1752	J. Jeffords												
1752	I. Grimball		1	1									
1752	M. Oliver												
1752	R. Stevens												
1753	T. Cater											3	
1754	J. Rover												
1754	I. Waight	1	1	2								3	
1754	J. Waring												
1754	T. Waring			1								1	
1755	J. Dart		1	1									
1755	A. Slam	1	1	2								1	
1755	W. Bull	1	1	2						1			
1755	D. Hext		1	1									
1755	J. Hutchins	1		1									
1755	T. Porter	1	1	2								1	
1755	D. Dubose									1			
1756	J. McGaw		1	1									
1756	T. Holman												
1756	E. Smith			1									
1756	S. Peronneau	1	1	2									
1756	J. Rutledge												
1756	J. Rutledge	1		1									

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1756	J. Rutledge		1	1						1			
1756	B. D'harriette	1		1								3	
1756	T. Winborn			1									
1756	F. Downing	1	2	3								1	
1756	J. Gendron, Jr.			2								parcel	
1756	P. Normand												
1756	T. Crostwaite			2						1			
1756	G. Couterier												
1756	M. Johns												
1756	R. Waring	1	1	2								1	
1757	F. Ladson											2	
1757	J. Stone												
1757	R. Hutchinson	1		1								1	
1757	S. Milner		1	1			1			3	1		
1757	A. Bonneau	1	1	2								5	
1758	J. Ward	1		1									
1759	J. Hartley	1		1			1						
1759	J. Hartley	1	2	3			1						
1759	B. Elliot												
1761	R. Izard	1	2	3						1			
1761	R. Izard			2								2	
1761	R. Izard	1		1								1	
1761	R. Izard	1		1						1			
1761	R. Izard	1		1								1	
1761	R. Izard	1		1									
1761	T. Elliott	1	2	3			4					4	

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1761	T. Elliot, Sr.												
1761	W. Anderson												
1761	C. Croft												
1761	J. Hamilton		2	2						1			
1761	W. Hutson	1	1	2									
1761	W. Hutson	1		1									
1761	J. Williams		1	1									
1762	S. Spry												
1762	E. Miller												
1762	T. Godfrey		1	1									
1763	J. Jones	1		1								1	
1763	C. Lowndes	1		1						2		4	
1763	E. Akin	1		1									
1763	E. Simmons	1		1									
1764	W. Miles	1		1									
1764	W. Miles												
1764	A. Johnston			3						1			
1764	N. Cleave												
1764	M. Russell		1	1								1	
1765	R. Glass	0.5		0.5									
1765	M. Gardner			1									
1765	J. Anderson												
1765	P. Taylor	1	2	3						2		1	
1765	P. Taylor	1		1			1					1	
1765	F. LeJau	2		2								6	
1765	F. LeJau	1		1									

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1765	W. Raven	5	1	6								10	
1765	E. Snipes												
1765	P. Spooler	2		2								1	
1765	J. Clifford		1	1									
1765	J. Blaymer		2	2						1			
1765	A. Broughton		1	3			1					8	
1765	S. Little			1									
1765	J. McGowen						1			2			
1766	R. Hume			3						1			
1766	R. Hume	1		1									
1766	R. Hume											3	
1766	M. Harvey												
1767	J. Mathews												
1767	W. Elliot	1	3	4								1	
1767	W. Elliot	1		1								1	
1767	W. Elliot	2		2									
1767	W. Elliot		1	1									
1767	W. Elliot									2			
1767	W. Elliot												
1767	W. Elliot												
1767	W. Elliot	1		1									
1767	S. Miles	1		1								1	
1767	B. Backhouse			1									
1767	J. Dumay												
1767	F. Perry			2									
1767	W. Vanderhorst	1	1	2								1	

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1768	G. Marshall		1	1									
1768	J. Streator. Sr.		2	2									
1768	M. Geiger	1	3	4								1	
1768	W. Joor			1									
1768	J. Govan												
1768	J. Lewis												
1768	N. Harleston	4	1	5								12	
1768	B. Branford	1		1									
1769	G. Seaman	1		1						2			
1769	G. Seaman	4	1	5						4			
1769	J. Rivers												
1769	J. Reid	2	1	3									
1769	M. Hardy			2	1		1						
1769	J. Cattell	1		1								1	
1770	J. Edwards		2	2	1		1					2	
1770	W. Williams		1	1			1			4			
1770	E. Simmons			2								2	
1770	J. Motte Sr.		1	1									
1771	J. McKenzie	1		1								1	
1771	J. McKenzie		1	1								3	
1771	J. McKenzie	2		3			1						
1771	W. Hart			1									
1771	B. Smith		1	1									
1771	J. Baxter									1			
1772	J. Thomas			1						1			
1772	A. Chisolme												

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1772	H. Guerin	1		1								4	
1772	S. Guerry			1								2	
1772	B. Hallum									lot			
1772	J. Maltby												
1772	R. Quash	3	1	4				2		2		4	
1772	M. Sellers												
1772	B. Simons	4	1	6								9	
1772	A. Videau	1		1									
1772	W. Young			1			1			3	1		
1772	C. Croll	1		1									
1772	S. Clayton												
1772	J. Fowler			1									
1772	R. Beresford			6			1			2	1		
1773	J. Fowler												
1773	J. Fabian	2	1	3								2	
1773	J. Perry	1	2	3								1	
1773	J. Perry	2		2								2	
1773	J. Prue			2						1			
1773	T. Caw												
1773	J. Postell	1	1	2								1	
1773	J. Postell	1		1	1		1						
1773	J. Postell	1		1	1		1					1	
1773	J. Postell	1		1									
1773	I. Nichols	1		1								1	
1773	J. Tonge	2	1	3								7	
1773	A. Stanyarne											8	

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1773	W. Joy												
1774	J. Atkins												
1774	J. Starling												
1774	J. Chicken												
1774	T. Holman	1	1	2									
1774	R. Singleton	2	1	3								7	
1774	G. Austin	2		2								1	
1774	G. Austin	1		1								4	
1774	P. Alexander												
1774	P. Manigault	3	1	4			1			2		2	
1774	P. Manigault												
1774	P. Manigault			2									
1774	W. Miles	1	1	2									
1774	L. Mouzon												
1774	R. Capers												
1774	J. McLaughling	1	1	2								1	
1774	E. Miles	1		1								2	
1775	D. Ravenel, Sr.	4	2	6								4	
1775	J. Simmons												
1775	W. Johnston	1	2	3									
1775	J. Jennens	1	1	2								1	
1775	S. Elliot	1	1	2								3	
1775	S. Elliot	1	1	2								1	
1775	H. Brown			2						1			
1775	T. Hopkins		1	1									
1775	P. Gourdin		1	1			1						

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1775	T. Bull												
1776	S. Miller	4	1	5									
1776	J. Wells												
1777	J. Nisbet	2	1	3						1		2	
1777	W. Sanders												
1777	W. Sanders											1	
1777	W. Sanders		1	1									
1777	M. Milner												
1777	J. McKelvy			1			1						
1777	J. Colleton	3		4								1	
1777	B. Deyoung												
1777	S. Lewis	1		1								1	
1777	W. Roberts												
1777	J. Boone	2	1	3								2	
1778	W. Chicken	1	1	2								3	
1779	W. Wragg	2	1	3			1						
1779	W. Wragg			1			1						
1779	W. Wragg												
1779	J. Parsons												
1779	J. Parsons	1	1	2								1	
1779	J. Parsons									2			
1779	G. Sommers	2		2			1						
1780	M. Stanyarne												
1781	J. Akin	1	1	2								2	
1781	W. Holiday			3						2	2		
1781	W. Loocok	1	1	2						1	1		

Date	Name	Ox Carts	Horse Carts	Total Carts	Ox Wagons	Horse Wagons	Total Wagons	Ox Plows	Horse Plows	Total Plows	Harr-ows	Yokes	Single Yokes
1781	D. Gaillard												
1781	M. Guerin												
1781	J. Roulain	1	1	2						2			
1781	P. Spooler									1		1	
1781	M. Ladson	1		1									
1781	F. Yonge, Sr.												

Table C12. Husbandry Tools Inventoried in Lowcountry Plantation Probates

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1739	A. Paris					
1739	J. Rivers					
1741	J. Herbert					
1741	J. Long					
1741	C. Snell					
1742	J. Barton					
1742	J. Wilson					
1742	J. Cook					
1742	W. Sanders					
1742	J. Guery					
1743	E. North					
1743	E. North					
1743	E. North					
1743	J. Simsons					
1743	J. Baker					
1743	J. Baker					
1743	J. St. John					
1743	J. St. John	1				
1743	J. St. John			1		
1743	J. Melvin					
1743	R. Gray					
1743	A. Stobo					
1743	W. Stobo					
1743	W. Stobo					
1743	E. Keating	4				
1743	J. Rotchford					
1745	S. Trott					
1745	R. Wright	11				
1745	A. Lewis					
1746	W. Ferguson					
1746	N. Serre					
1746	A. Saturday					
1746	P. Peyre					
1746	D. Townsend					
1747	S. Baker					
1747	J. Daniell					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1748	J. Vouloux					
1748	P. Simons					
1749	C. Armstrong					
1749	B. Godin					
1749	B. Godin					
1749	B. Godin					
1749	I. Chandler	1				
1749	T. Palmer					
1749	B. Postell					
1750	W. Porter					
1750	T. Bulline					
1750	M. McGregore					
1750	J. Splatt					
1751	W. Chapman					
1751	W. Chapman					
1751	T. Johnson					
1751	E. Clapp					
1751	W. Cattell, Jr.					
1751	W. Cattell, Jr.					
1751	G. Benison					
1752	J. Jeffords					
1752	I. Grimball		2			
1752	M. Oliver					
1752	R. Stevens				1	
1753	T. Cater					
1754	J. Royer		2			
1754	I. Waight			lot		
1754	J. Waring					
1754	T. Waring					
1755	J. Dart					
1755	A. Slam					
1755	W. Bull					
1755	D. Hext					
1755	J. Hutchins					
1755	T. Porter					
1755	D. Dubose					
1756	J. McGaw					
1756	T. Holman					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1756	E. Smith					
1756	S. Peronneau					
1756	J. Rutledge					
1756	J. Rutledge					
1756	J. Rutledge					
1756	B. D'harriette					
1756	T. Winborn					
1756	F. Downing					
1756	J. Gendron, Jr.					
1756	P. Normand					
1756	T. Crostwaite					
1756	G. Couterier					
1756	M. Johns					
1756	R. Waring					
1757	F. Ladson	1				
1757	J. Stone					
1757	R. Hutchinson					
1757	S. Milner					
1757	A. Bonneau					
1758	J. Ward					
1759	J. Hartley					
1759	J. Hartley					
1759	B. Elliot					
1761	R. Izard					
1761	R. Izard					
1761	R. Izard					
1761	R. Izard			1		
1761	R. Izard					
1761	R. Izard					
1761	T. Elliott					
1761	T. Elliot, Sr.					
1761	W. Anderson					
1761	C. Croft					
1761	J. Hamilton					
1761	W. Hutson					
1761	W. Hutson					
1761	J. Williams					
1762	S. Spry					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1762	E. Miller					
1762	T. Godfrey					
1763	J. Jones					
1763	C. Lowndes					
1763	E. Akin					
1763	E. Simmons					
1764	W. Miles	2		2		
1764	W. Miles					
1764	A. Johnston					
1764	N. Cleave					
1764	M. Russell					
1765	R. Glass					
1765	M. Gardner					
1765	J. Anderson					
1765	P. Taylor					
1765	P. Taylor					
1765	F. LeJau					
1765	F. LeJau					
1765	W. Raven					
1765	E. Snipes					
1765	P. Spooler					
1765	J. Clifford					
1765	J. Blaymer	1				
1765	A. Broughton					
1765	S. Little	6				
1765	J. McGowen					
1766	R. Hume					
1766	R. Hume					
1766	R. Hume			1		
1766	M. Harvey					
1767	J. Mathews					
1767	W. Elliot					
1767	W. Elliot					
1767	W. Elliot					
1767	W. Elliot					
1767	W. Elliot					
1767	W. Elliot					
1767	W. Elliot					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1767	W. Elliot					
1767	S. Miles					
1767	B. Backhouse					
1767	J. Dumay					
1767	F. Perry					
1767	W. Vanderhorst					
1768	G. Marshall					
1768	J. Streator, Sr.					
1768	M. Geiger					
1768	W. Joor					
1768	J. Govan	1				
1768	J. Lewis					
1768	N. Harleston					
1768	B. Branford					
1769	G. Seaman					
1769	G. Seaman					
1769	J. Rivers					
1769	J. Reid					
1769	M. Hardy					
1769	J. Cattell					
1770	J. Edwards					
1770	W. Williams					
1770	E. Simmons					
1770	J. Motte Sr.					
1771	J. McKenzie					
1771	J. McKenzie			parcel		
1771	J. McKenzie					
1771	W. Hart	4				
1771	B. Smith					
1771	J. Baxter					
1772	J. Thomas					
1772	A. Chisolme					
1772	H. Guerin					
1772	S. Guerry			1		
1772	B. Hallum	1				
1772	J. Maltby			1		
1772	R. Quash					
1772	M. Sellers					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1772	B. Simons					
1772	A. Videau					
1772	W. Young					
1772	C. Croll					
1772	S. Clayton					
1772	J. Fowler					
1772	R. Beresford					
1773	J. Fowler					
1773	J. Fabian					
1773	J. Perry					
1773	J. Perry					
1773	J. Prue					
1773	T. Caw					
1773	J. Postell					
1773	J. Postell					
1773	J. Postell					
1773	J. Postell			1		
1773	I. Nichols					
1773	J. Tonge					
1773	A. Stanyarne					
1773	W. Joy					
1774	J. Atkins					
1774	J. Starling					
1774	J. Chicken					
1774	T. Holman					
1774	R. Singleton					
1774	G. Austin					
1774	G. Austin					
1774	P. Alexander					
1774	P. Manigault			1		
1774	P. Manigault					
1774	P. Manigault					
1774	W. Miles					
1774	L. Mouzon					
1774	R. Capers					
1774	J. McLaughling			1		
1774	E. Miles					
1775	D. Ravenel, Sr.					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1775	J. Simmons					
1775	W. Johnston					
1775	J. Jennens					
1775	S. Elliot					
1775	S. Elliot					
1775	H. Brown					
1775	T. Hopkins					
1775	P. Gourdin	1				
1775	T. Bull					
1776	S. Miller					
1776	J. Wells					
1777	J. Nisbet					
1777	W. Sanders					
1777	W. Sanders					
1777	W. Sanders					
1777	M. Milner					
1777	J. McKelvy					
1777	J. Colleton					
1777	B. Deyoung					
1777	S. Lewis					
1777	W. Roberts					
1777	J. Boone					
1778	W. Chicken					
1779	W. Wragg					
1779	W. Wragg					
1779	W. Wragg					
1779	J. Parsons					
1779	J. Parsons					
1779	J. Parsons					
1779	G. Sommers					
1780	M. Stanyarne					
1781	J. Akin					
1781	W. Holiday					
1781	W. Loocok					
1781	D. Gaillard					
1781	M. Guerin					
1781	J. Roulain					
1781	P. Spooler					

Date	Name	Horse Bells	Cow Bells	Branding Irons	Marking Irons	Horse Ear Marker
1781	M. Ladson					
1781	F. Yonge, Sr.					

Bibliography

Accessible Archives
2015a The South Carolina Gazette. Electronic database, http://www.accessible.com/accessible/brand?MpThe+South+Carolina+Gazette=on, accessed 11 February 2015.

Accessible Archives
2015b The Virginia Gazette. Electronic database, http://www.accessible.com/accessible/brand?MpThe+Virginia+Gazette=on, accessed 11 February 2015.

Adams, William Hampton
1990 Landscape Archaeology, Landscape History, and the American Farmstead. *Historical Archaeology* 24(4):92-101.

Albarella, Umberto
1999 'The Mystery of Husbandry': Medieval Animals and the Problem of Integrating Historical and Archaeological Evidence. *Antiquity* 73:867-875.

Albright, J.L. and C.W. Arave
1997 *The Behaviour of Cattle*. CAB International, Oxon, United Kingdom.

Alvard, Michael S. and Lawrence Kuznar
2001 Deferred Harvests: The Transition from Hunting to Animal Husbandry. *American Anthropologist* 103(2):295-311.

Anderson, Virginia DeJohn
2002 Animals into the Wilderness: The Development of Livestock Husbandry in the Seventeenth-Century Chesapeake. *The William and Mary Quarterly* 59(2):377-408.

Anderson, Virginia DeJohn
2004 *Creatures of Empire: How Domestic Animals Transformed Early America*. Oxford University Press, New York.

Anschuetz, Kurt F., Richard H. Wilshusen, and Cherie L. Scheick
2001 An Archaeology of Landscapes: Perspectives and Directions. *Journal of Archaeological Research* 9(2):157-211.

Anthony, David W. and Dorcas R. Brown
1989 Looking a Gift Horse in the Mount: Identification of the Earliest Bitted Equids and the Microscopic Analysis of Wear. In *Early Animal Domestication and Its Cultural Context*, edited by Pam J. Crabtree, Douglas Campana, and Kathleen Ryan, pp. 98-117. MASCA Research Papers in Science and Archaeology Special Supplement to Volume 6. MASCA, University Museum of Archaeology and Anthropology, University of Pennsylvania, Philadelphia.

Arbuckle, Benjamin
2014 Inequality and the Origins of Wool Production in Central Anatolia. In *Animals and Inequality in the Ancient World*, edited by Benjamin S. Arbuckle and Sue Ann McCarty, pp. 209-229. University Press of Colorado, Boulder.

Arbuckle, Benjamin S. and Sue Ann McCarty (editors)
2014a *Animals and Inequality in the Ancient World*. University Press of Colorado, Boulder.

Arbuckle, Benjamin S. and Sue Ann McCarty
2014b Animals and Inequality in the Ancient World: An Introduction. In *Animals and Inequality in the Ancient World*, edited by Benjamin S. Arbuckle and Sue Ann McCarty, pp. 1 -10. University Press of Colorado, Boulder.

Argent, Gala
2010 Do the Clothes Make the Horse? Relationality, Roles and Statuses in Iron Age Inner Asia. *World Archaeology* 42(2):157-174.

Atkins, Stephen C.
1994 An Archaeological Perspective on the African-American Slave Diet at Mount Vernon. Unpublished MA thesis, Department of Anthropology, The College of William and Mary, Williamsburg, Virginia.

Bahti, Mark Thomas
1990 Animals in Hopi Duality. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 134-139. Unwin Hyman, London.

Baker, John R. and Don R. Brothwell
1980 *Animal Diseases in Archaeology*. Academic Press, New York.

Balée, William
2006 The Research Program of Historical Ecology. *Annual Review of Anthropology* 35:75-98.

Balée, William and Clark L. Erickson
2006 Time, Complexity, and Historical Ecology. In *Time and Complexity in Historical Ecology: Studies in the Neotropical Lowlands*, edited by William Balée and Clark L. Erickson, pp. 1-12. Columbia University Press, New York.

Barrett, Reginald H.
1982 Habitat Preferences of Feral Hogs, Deer, and Cattle on a Sierra Foothill Range. *Journal of Range Management* 35(3):342-346.

Bartosiewicz, László
1987 Cattle Metapodials Revisited: A Brief Review. *ArchaeoZoologia* 1(1):47-51.

Bartosiewicz, László
1995 *Animals in the Urban Landscape in the Wake of the Middle Ages: A Case Study from Vác, Hungary*. BAR International Series 609, Hadrian Books, Oxford.

Bartosiewicz, László
2008 Taphonomy and Palaeopathology in Archaeozoology. *Geobios* 41:69-77.

Bartosiewicz, László and Gábor Bartosiewicz
2002 "Bamboo Spine" in a Migration Period Horse from Hungary. *Journal of Archaeological Science* 29: 819-830.

Bartosiewicz, László and Erika Gál
2013 *Shuffling Nags, Lame Ducks: The Archaeology of Animal Disease*. Oxbow Books, Oxford.

Bartosiewicz, László and Márton Gyöngyössy
2006 The Khan's Mule: Attitudes Toward a Forgotten Animal. In *Horses and Humans: The Evolution of Human-Equine Relationships*, edited by Sandra L. Olsen, Susan Grant, Alice M. Choyke, and László Bartosiewicz, pp. 289-299. BAR International Series 1560. Archaeopress, Oxford.

Bartosiewicz, László, Wim Van Neer, and An Lentacker
1993 Metapodial Asymmetry in Draft Cattle. *International Journal of Osteoarchaeology* 3:69-75.

Bartosiewicz, László, Wim Van Neer, and An Lentacker

1997 *Draught Cattle: Their Osteological Identification and History*. Musée Royal de L'Afrique Centrale Tervuren, Belgique. Annales Sciences Zoologiques. Volume 281.

Bartram, John and Francis Harper
1942 Diary of a Journey Through the Carolinas, Georgia, and Florida from July 1, 1765 to April 10, 1766. *Transactions of the American Philosophical Society, New Series* 33(1):i-iv + 1-1-120.

Barwell, Ian and Michael Ayre
1982 *The Harnessing of Draught Animals*. Intermediate Technology Publications, London.

Beaudry, Mary Carolyn
1980 *"Or What Else You Please to Call It:" Folk Semantic Domains in Early Virginia Probate Inventories*. PhD Dissertation, Department of Anthropology, Brown University, Providence, Rhode Island. University Microfilms, Ann Arbor

Bedell, John
2000 Archaeology and Probate Inventories in the Study of Eighteenth-Century Life. *The Journal of Interdisciplinary History* 31(2): 223-245.

Bender, Barbara
2002 Time and Landscape. *Current Anthropology* 43, Supplement: Repertoires of Timekeeping in Anthropology: S103-S112.

Bendrey, R.
2007 New Methods for the Identification of Evidence for Bitting on Horse Remains from Archaeological Sites. *Journal of Archaeological Science* 34:1036-1050.

Berkebile, Don H.
1978 *Carriage Terminology: An Historical Dictionary*. Smithsonian Institution Press and Liberty Cap Books, Washington, DC.

Blassingame, John W.
1976 Status and Social Structure in the Slave Community: Evidence from New Sources. In *Perspectives and Irony in American Slavery*, edited by Harry P. Owens, pp. 137-152. University Press of Mississippi, Jackson.

Bonner, James C.

1963 The Open Range Livestock Industry in Colonial Georgia. *The Georgia Review* 17(1):85-92.

Boosman, R. F. Nemeth, E. Gruys, and A. Klarenbeek
1989 Arteriographical and Pathological Changes in Chronic Laminitis in Dairy Cattle. *The Veterinary Quarterly* 11 (3):144-155.

Bouissou, Marie-France, Alain Boissy, Pierre Le Neindre, and Isabelle Veissier
2001 The Social Behaviour of Cattle. In *Social Behaviour in Farm Animals*, edited by L.J. Keeling and H.W. Gonyou, pp. 113 -145. CAB International, New York.

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

Bourdieu, Pierre and Loïc Wacquant
1992 *An Invitation to Reflexive Sociology*. The University of Chicago Press, Chicago.

Bowen, Joanne
1975 Probate Inventories: An Evaluation from the Perspective of Zooarchaeology and Agricultural History at Mott Farm. *Historical Archaeology* 9:11-25.

Bowen, Joanne V.
1990 *A Study of Seasonality and Subsistence: Eighteenth-Century Suffield, Connecticut*. PhD dissertation, Department of Anthropology Brown University, Providence, Rhode Island. University Microfilms, Ann Arbor.

Bowen, Joanne
1994 A Comparative Analysis of the New England and Chesapeake Herding Systems. In *Historical Archaeology of the Chesapeake*, edited by Paul A. Shackel and Barbara J. Little, pp. 155-168. Smithsonian Institution Press, Washington.

Bowen, Joanne
1996 Foodways in the 18th-Century Chesapeake. In *The Archaeology of 18th-Century Virginia*, edited by Theodore R. Reinhart, pp. 87-130. Special Publication No. 35, Archaeological Society of Virginia, Council of Virginia Archaeologists, Richmond, Virginia.

Bowen, Joanne

1998 To Market, to Market: Animal Husbandry in New England. *Historical Archaeology* 32(3):137-152.

Bowen, Joanne
1999 The Chesapeake Landscape and the Ecology of Animal Husbandry. In *Old and New Worlds*, edited by Geoff Egan and Ronn Michael, pp. 358-367. Oxbow Books, Oxford.

Bowen, Joanne V.
2009 The Transformation of the Chesapeake. Paper presented at "The Early Chesapeake: Reflecting Back, Projecting Forward," sponsored by the Omohundro Institute of Early American History and Culture, St. Mary's City, Maryland.

Bowen, Joanne
2017 Domesticating the Chesapeake Landscape. In *Discovering What Counts in Archaeology and Reconstruction: Lessons from Colonial Williamsburg*, edited by Ywone Edwards-Ingram and Andrew Edwards, pp. (forthcoming). University Press of Florida, Gainesville. Manuscript on file, Colonial Williamsburg Foundation, Williamsburg, Virginia.

Bowen, Joanne and Susan Trevarthen Andrews
2000 *The Starving Time at Jamestown: Faunal Analysis of Pit 1, Pit 3, the Bulwark Ditch, Ditch 6, Ditch 7, and Midden 1, James City County, Virginia*. Submitted to William M. Kelso, Jamestown Rediscovery, Association for the Preservation of Virginia Antiquities. Copies available from Jamestown Rediscovery Foundation.

Bowen, Joanne and Michael Jarvis
1994 Provisioning Systems in the New World: the British Colony of Bermuda. *Bermuda Journal of Archaeology and Maritime History* 6:81-94.

Bowen, Joanne, Susan Trevarthen Andrews, Stephen Atkins, Jenna Carlson, and Dessa Lightfoot
2016 *Faunal Analysis for Mount Vernon: South Grove Assemblages (44FX762/17), House for Families Assemblages (44FX762/470), Also Pit Associated with Lawrence Washington's Wash House (44FX762/35/1), Small Pit Behind Kitchen (44FX762/17)*. Submitted to Mount Vernon Archaeology, Historic Preservation, and Collections Department, George Washington's Mount Vernon, Mount Vernon, Virginia.

Bradburn, Douglas M. and John C. Coombs

2006 Smoke and Mirrors: Reinterpreting the Society and Economy of the Seventeenth-Century Chesapeake. *Atlantic Studies* 3(2):131-157.

Branton, Nicole
2009 Landscape Approaches in Historical Archaeology: The Archaeology of Places. In *International Handbook of Historical Archaeology*, edited by Teresita Majewski and David Gaimster, pp. 51-65. Springer, New York City.

Breen, T. H.
1982 Back to Sweat and Toil: Suggestions for the Study of Agricultural Work in Early America. *Pennsylvania History* 49(4):241-258.

Breitburg, Emanuel
1991 Verification and Reliability of NISP and MNI Methods of Quantifying Taxonomic Abundance: A View from Historic Site Zooarchaeology. In *Beamers, Bobwhites, and Blue-Points: Tributes to the Career of Paul W. Parmalee*, edited by James R. Purdue, Walter E. Klippel, and Bonnie Whatley Styles, pp. 153-162. Illinois State Museum Scientific Papers, Vol. 23, Springfield, Illinois.

Brown, Dorcas and David Anthony
1998 Bit Wear, Horseback Riding and the Botai Site in Kazakstan. *Journal of Archaeological Science* 25:331-347.

Brown, Jonathan
1991 *The Horse in Husbandry*. Farming Press, Ipswich, United Kingdom.

Brown, Katharine L. and Nancy T. Sorrells
2004 *Virginia's Cattle Story: The First Four Decades*. Lot's Wife Publishing, Staunton, Virginia.

Brown, Kathleen M.
1996 *Good Wives, Nasty Wenches, & Anxious Patriarchs: Gender, Race, and Power in Colonial Virginia*. Institute of Early American History and Culture, Williamsburg, Virginia. University of North Carolina Press, Chapel Hill.

Brownrigg, Gail
2006 Horse Control and the Bit. In *Horses and Humans: The Evolution of Human-Equine Relationships*, edited by Sandra L. Olsen, Susan Grant, Alice M. Choyke, and László Bartosiewicz, pp. 165-171. BAR International Series 1560. Archaeopress, Oxford.

Budiansky, Stephen
1992 *The Covenant of the Wild: Why Animals Chose Domestication*. William Morrow and Company, Inc., New York.

Budiansky, Stephen
1997 *The Nature of Horses: Exploring Equine Evolution, Intelligence, and Behavior*. The Free Press, New York.

Calhoun, Jeanne A., Elizabeth A. Paysinger, and Martha A. Zierden
1982 *A Survey of Economic Activity in Charleston, 1732-1770*. Archaeological Contributions 2, The Charleston Museum, Charleston, South Carolina.

Carlson, Jenna Kay
2014a *Analysis of Faunal Remains from the South Flanker Well, Drayton Hall, Charleston, South Carolina*. Submitted to Drayton Hall, Charleston, South Carolina.

Carlson, Jenna Kay
2014b *Preliminary Report: Analysis of the Horse Skeleton Recovered from Jamestown Island, Virginia*. Submitted to Jamestown Rediscovery Archaeological Project, Jamestown, Virginia.

Carlson Dietmeier, Jenna Kay
2015a *Analysis of Faunal Remains from the Pre-Drayton Assemblage, Drayton Hall, Charleston, South Carolina*. Submitted to Drayton Hall, Charleston, South Carolina.

Carlson Dietmeier, Jenna Kay
2015b *Preliminary Report: Analysis of the Horse Skeleton Recovered from Yorktown, Virginia*. Submitted to York County Historical Museum, Yorktown, Virginia.

Carney, Judith
1996 Rice Milling, Gender, and Slave Labour in Colonial South Carolina. *Past & Present* 153:108-134.

Carney, Judith
2001 *Black Rice: the African Origins of Rice Cultivation in the Americas*. Harvard University Press, Cambridge, Massachusetts.

Carr, Lois Green and Russell R. Menard

1989 Land, Labor, and Economies of Scale in Early Maryland: Some Limits to Growth in the Chesapeake System of Husbandry. *The Journal of Economic History* 49(2):407-418.

Carr, Lois Green and Lorena S. Walsh
1988 Economic Diversification and Labor Organization in the Chesapeake, 1650-1820. In *Work and Labor in Early America*, edited by Stephen Innes, pp. 144-188. University of North Carolina Press, Chapel Hill.

Carson, Cary, Joanne Bowen, Willie Graham, Martha McCartney, and Lorena Walsh
2008 New World, Real World: Improvising English Culture in Seventeenth-Century Virginia. *The Journal of Southern History* 74(1):31-88.

Chard, Thornton
1940 Did the First Spanish Horses Landed in Florida and Carolina Leave Progeny? *American Anthropologist* 42: 90-106.

Clifton, James M.
1981 The Rice Industry in Colonial America. *Agricultural History* 55(3):266-283.

Clutton-Brock, Juliet
1992 *Horse Power: A History of the Horse and the Donkey in Human Societies*. Harvard University Press, Cambridge.

Clutton-Brock, Juliet
1994 The Unnatural World: Behavioural Aspects of Humans and Animals in the Process of Domestication. In *Animals and Human Society: Changing Perspectives*, by Aubrey Manning and James Serpell, pp. 23-35. Routledge, London.

Clutton-Brock, Juliet
1999 *A Natural History of Domesticated Mammals, Second Edition*. Cambridge University Press, Cambridge.

Cohen, Esther
1994 Animals in Medieval Perceptions: the Image of the Ubiquitous Other. In *Animals and Human Society: Changing Perspectives*, edited by Aubrey Manning and James Serpell, pp. 59-80. Routledge, New York.

Conant, E.K., R. Juras, and E.G. Cothran

2012 A Microsatellite Analysis of Five Colonial Spanish Horse Populations of the Southeastern United States. *Animal Genetics* 43(1):53-62.

Conroy, Drew
2007 *Oxen: A Teamster's Guide*. Storey Publishers, North Adams, Massachusetts.

Crabtree, Pam J.
1995 The Symbolic Role of Animals in Anglo-Saxon England: Evidence from Burials and Cremations. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 10-26. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Crabtree, Pam
2007 Breaking and Shaping Beastly Bodies: Animals as Material Culture in the Middle Ages: Final Discussion. In *Breaking and Shaping Beastly Bodies: Animals as Material Culture in the Middle Ages*, edited by Aleksander Pluskowski, pp. 235-239. Oxbow Books, Oxford.

Creese, John L.
2011 Algonquian Rock Art and the Landscape of Power. *Journal of Social Archaeology* 11(1):3-20.

Cupere, Bea De, An Lentacker, Wim Van Neer, Marc Waelkens, and Laurent Verslype
2000 Osteological Evidence for the Draught Exploitation of Cattle: First Applications of a New Methodology. *International Journal of Osteoarchaeology* 10:254-267.

d'Anglure, Bernard Saladin
1990 Nanook, Super-Male: the Polar Bear in the Imaginary Space and Social Time of the Inuit of the Canadian Arctic. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 178-195. Unwin Hyman, London.

Daugnora, Linas and Richard Thomas
2002 Horse Burials from Middle Lithuania: A Palaeopathological Investigation. In *Diet and Health in Past Animal Populations: Current Research and Future Directions*, edited by J. Davies, M. Fabiš, I. Mainland, M. Richards, and R. Thomas, pp. 68-74. Proceedings of the 9th Conference of the International Council of Archaeozoology , Durham, August 2002. Oxbow Books, Oxford.

Deetz, James

1996 *In Small Things Forgotten: An Archaeology of Early American Life*. Anchor Books, New York.

DeFrance, Susan D.
2010 Paleopathology and Health of Native and Introduced Animals on Southern Peruvian and Bolivian Spanish Colonial Sites. *International Journal of Osteoarchaeology* 20:508-524.

Delle, James
1998 *An Archaeology of Social Space: Analyzing Coffee Plantations in Jamaica's Blue Mountains*. Plenum Press, New York.

Delle, James A.
1999 The Landscapes of Class Negotiation on Coffee Plantations in the Blue Mountains of Jamaica: 1790-1850. *Historical Archaeology* 33(1):136-158.

Digital Collections from the Washington Library [DCWL]
1785-1798. Overseer's Account Book. Electronic document, http://catalog.mountvernon.org/cdm/compoundobject/collection/p16829coll11/id/325, accessed September 22, 2015.

Dodge, Harrison, Howell
1932 *Mount Vernon: Its Owner and Its Story*. J.B. Linppincott Company, Philadelphia.

Douglas, Mary
1970 *Natural Symbols: Explorations in Cosmology*. Routlege, New York.

Drayton, John
1802 *A View of South Carolina, as Respects Her Natural and Civil Concerns*. W.P. Young, Charleston, South Carolina.

Dunaway, Wilma A.
1994 The Southern Fur Trade and the Incorporation of Southern Appalachia into the World-Economy, 1690-1763. *Review* 17(2):215-242.

Dunbar, Gary S.
1961 Colonial Carolina Cowpens. *Agricultural History* 35(3):125-131.

Dutson, Judith

2005 *Storey's Illustrated Guide to 96 Horse Breeds of North America*. Storey Publishing, North Adams, Massachusetts.

Easterby, J.H. (editor)
2004 *The South Carolina Rice Plantation as Revealed in the Papers of Robert F.W. Allston*. University of South Carolina Press, Columbia.

Edelson, S. Max
2006 *Plantation Enterprise in Colonial South Carolina*. Harvard University Press, Cambridge, Massachusetts.

Edelson, S. Max
2007 Clearing Swamps, Harvesting Forests: Trees and the Making of a Plantation Landscape in the Colonial South Carolina Lowcountry. *Agricultural History* 81(3):381-406.

Edgar, Walter
1998 *South Carolina: A History*. University of South Carolina Press, Columbia.

Ellenberg, George B.
2007 *Mule South to Tractor South: Mules, Machines, and the Transformation of the Cotton South*. The University of Alabama Press, Tuscaloosa, Alabama.

Epenshade, Christopher T. and Marian D. Roberts
1991 *An Archaeological and Historical Overview of the Drayton Hall Tract, Incorporating Data from the 1990 Archaeological Reconnaissance Survey*. Brockington and Associates, Inc. Submitted to the National Trust for Historic Preservation. Copies available from Brockington and Associates, Charleston.

Epperson, Terrance W.
1990 Race and the Disciplines of the Plantation. *Historical Archaeology* 24(4):29-36.

Evans, J. Warren
2000 *Horses, 3rd Edition: A Guide to Selection, Care, and Enjoyment*. Henry Holt and Company, New York.

Evans, Nancy Goyne
1997 *American Windsor Furniture: Specialized Forms*. Hudson Hills Press, New York.

Fabiš, Marian

2002 Pathological Alteration of Cattle Skeletons—Evidence for the Draught Exploitation of Animals? In *Diet and Health in Past Animal Populations: Current Research and Future Directions*, edited by J. Davies, M. Fabiš, I. Mainland, M. Richards, and R. Thomas, pp. 58-62. Proceedings of the 9th Conference of the International Council of Archaeozoology, Durham, August 2002. Oxbow Books, Oxford.

Fabiš, Marian and Richard Thomas

2011 Not Just Cattle: Cranial Perforations Revisited. *International Journal of Osteoarchaeology* 21:347-350.

Feist, James D. and Dale R. McCullough

1976 Behavior Patterns and Communication in Feral Horses. *Zeitschrift für Tierpsychologie* 41(4):337-371.

Felton, William

1794 *A Treatise on Carriages: Comprehending Coaches, Chariots, Phaetons, Curricles, Whiskies, Etc.; Together with their Proper Harness in Which the Fair Price of Every Article are Accurately Stated*. Printed for and sold by the Author, London.

Fold3 by Ancestry

2016 South Carolina Estate Inventories and Bills of Sale, 1732-1872. Electronic document, https://www.fold3.com/browse/1/hnQ6Z07nG, accessed January 14, 2016.

Fraser, Andrew F.

1992 *The Behaviour of the Horse*. CAB International, Oxon, United Kingdom.

Fusonie, Alan and Donna Jean Fusonie

1998 *George Washington, Pioneer Farmer*. Mount Vernon Ladies' Association, Mount Vernon, Virginia.

Fussell, G.E.

1966 Ploughs and Ploughing before 1800. *Agricultural History* 40 (3):177-186.

Garrett, Martin A., Jr.

1998 Evidence on the Use of Oxen in the Postbellum South. *Social Science History* 22(2):225-249.

Garrow, Patrick H. and Thomas R. Wheaton, Jr., editors
1986 *Oxon Hill Manor Archaeological Site Mitigation Project, Volumes 1 and 2*. Garrow and Associates. Submitted to The Maryland Department of Transportation State Highway Administration, Contract No. P-878-255-372. Copies available from Maryland Archaeological Conservation Lab, St. Leonard, Maryland.

George Washington Papers at the Library of Congress, 1741-1799 [GWPLC]
1785-1786 "Notes & observations" on Plantations. Series 4. General Correspondence. 1697-1799. Electronic document, http://memory.loc.gov/cgi-bin/ampage?collId=mgw4&fileName=gwpage094.db&recNum=1006, accessed September 17, 2015.

Gill, Harold B., Jr.
1978 Wheat Culture in Colonial Virginia. *Agricultural History* 52(3):380-393.

Goe, Michael R. and Robert E. McDowell
1980 *Animal Traction: Guidelines for Utilization*. Cornell International Agriculture Mimeo. Department of Animal Science, Cornell University, Ithaca, New York.

Grandin, Temple
1980 Observations of Cattle Behavior Applied to the Design of Cattle-Handling Facilities. *Applied Animal Ethology* 6:19-31.

Gray, Lewis Cecil
1933 *History of Agriculture in the Southern United States to 1860, Volume 1*. Carnegie Institution of Washington, Washington, DC.

Greene, Jack P.
2007 Early Modern Southeastern North America and the Broader Atlantic and American Worlds. *The Journal of Southern History* 73(3):525-538.

Griffith, Mark
2006 Horsepower and Donkeywork: Equids and the Ancient Greek Imagination. *Classical Philosophy* 101(3):185-246.

Groot, Maaike
2002 Palaeopathological Evidence for Draught Cattle on a Roman Site in the Netherlands. In *Diet and Health in Past Animal Populations: Current Research and Future Directions*, edited by J. Davies, M. Fabiš, I. Mainland, M. Richards,

and R. Thomas, pp. 52-57. Proceedings of the 9th Conference of the International Council of Archaeozoology, Durham, August 2002. Oxbow Books, Oxford.

Handoo, Jawarharlal
1990 Cultural Attitudes to Birds and Animals in Folklore. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 37-42. Unwin Hyman, London.

Hecker, Howard M.
1982 Domestication Revisited: Its Implications for Faunal Analysis. *Journal of Field Archaeology* 9:217-236.

Hemmer, Helmut
1990 *Domestication: the Decline of Environmental Appreciation*. Cambridge University Press, Cambridge.

Hernandez, Lucina, Henri Barral, Gonzalo Halffter, and Salvador Sanchez Colon
1999 A Note on the Behavior of Feral Cattle in the Chihuahuan Desert of Mexico. *Applied Animal Behaviour Science* 63:259-267.

Higginbotham, A. Leon, Jr.
1980 *In the Matter of Color: Race & The American Legal Process: the Colonial Period*. Oxford University Press, New York.

Higham, Charles F.W.
1969a The metrical Attributes of Two Samples of Bovine Limb Bones. *Journal of Zoology* 157:63-74.

Higham, Charles F. W.
1969b Towards an Economic Prehistory of Europe. *Current Anthropology* 10 (2/3):139-150.

Hindus, Michael S.
1976 Black Justice Under White Law: Criminal Prosecutions of Blacks in Antebellum South Carolina. *The Journal of American History* 63(3):575-599.

Hirschfeld, Fritz
1997 *George Washington and Slavery: A Documentary Portrayal*. University of Missouri Press, Columbia.

Hobday, Frederick T.G.

1914 *Castration (Including Cryptorchids and Caponing) and Ovariotomy.* W & AK Johnston, Limited, Edinburgh.

Holcomb, Brent H.
1977 *Probate Records of South Carolina Volume I: Index to Inventories, 1746 – 1785*. Southern Historical Press, Greenville, South Carolina.

Home, Henry, Lord.
1776 *The Gentleman Farmer. Being an Attempt to Improve Agriculture, by Subjecting It to the Test of Rational Principles*. T. Cadell, London

Hribal, Jason
2003 "Animals are Part of the Working Class": A Challenge to Labor History. *Labor History* 44(4):435-453.

Hume, Ivor Noël
1964 Archaeology: Handmaiden to History. *The North Carolina Historical Review* 41(2): 214-225.

Hundley, Daniel Robinson
1860 *Social Relations in Our Southern States*. Henry B. Price, New York.

Ingold, Tim
1980 *Hunters, Pastoralists, and Ranchers: Reindeer Economies and Their Transformations*. Cambridge University Press, Cambridge.

Ingold, Tim
1983 The Architect and the Bee: Reflections on the Work of Animals and Men. *Man, New Series* 18(1):1-20.

Ingold, Tim
1994 From Trust to Domination: An Alternative History of Human-Animal Relations. In *Animals and Human Society: Changing Perspectives*, edited by Aubrey Manning and James Serpell, pp. 1-22. Routledge, New York.

Jackson, Anthony
1990 Pictish Animal Symbols. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 103-118. Unwin Hyman, London.

Janeczek, M., A. Chroszcz, Z. Miklikova, and M. Fabis
2010 The Pathological Changes in the Hind Limb of a Horse from the Roman Period. *Veterinarni Medicina* 55(7):331-335.

Janis, Christine
1976 The Evolutionary Strategy of the Equidae and the Origins of Rumen and Cecal Digestion. *Evolution* 30 (4):757-774.

Johannsen, Niels Nørkjær
2002 Paleopathology and Neolithic Cattle Traction: Methodological Issues and Archaeological Perspectives. In *Diet and Health in Past Animal Populations: Current Research and Future Directions*, edited by J. Davies, M. Fabiš, I. Mainland, M. Richards, and R. Thomas, pp. 39-51. Proceedings of the 9th Conference of the International Council of Archaeozoology, Durham, August 2002. Oxbow Books, Oxford.

Jones, Katharine M.
1957 *The Plantation South*. The Bobbs-Merrill Company, New York.

Jordan, Terry G.
1993 *North American Cattle-Ranching Frontiers: Origins, Diffusions, and Differentiation*. University of New Mexico Press, Albuquerque.

Kabuga, J.D. and P. Appiah
1992 A Note on the Ease of Handling and Flight Distance of *Bos indicus*, *Bos taurus* and their Crossbreds. *Animal Production* 54(2):309-311.

Keiper, Ronald R.
1985 *The Assateague Ponies*. Tidewater Publishers, Centreville, Maryland.

Keswani, Priscilla Schuster
1994 The Social Context of Animal Husbandry in Early Agricultural Societies: Ethnographic Insights and an Archaeological Example from Cyprus. *Journal of Anthropological Archaeology* 13:255-277.

King, Barbara J.
2010 *Being with Animals: Why We Are Obsessed with the Furry, Scaly, Feathered Creatures Who Populate Our World*. Doubleday: New York.

Klenck, Joel D.
1995 Bedouin Animal Sacrifice Practices: Case Study in Israel. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 57-72. MASCA Research Papers in Science and Archaeology, Volume 12,

MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Knapp, A. B., and Ashmore, W.
1999 Archaeological landscapes: Constructed, conceptualized, ideational. In *Archaeologies of Landscape: Contemporary Perspectives*, edited by W. Ashmore and A.B. Knapp, pp. 1-30. Blackwell Publishers, Maiden, MA.

Knight, Lauren
2010 *Hidden Lives: The Interpretation of the Slave Quarter Sites at Mount Vernon*. Master's Thesis. Historic Preservation Program, University of Maryland, College Park.

Laing, Wesley N.
1959 Cattle in Seventeenth-Century Virginia. *The Virginia Magazine of History and Biography* 67(2):143-163.

Laird, Matthew R., Nicholas M. Luccketti, and Merry A. Outlaw
2016 *Yorktown's Buried History: From Chiskiack to the Civil War*. York County Historical Museum, Yorktown, Virginia. (forthcoming) Manuscript on file, York County Historical Museum.

Lamb, Robert Byron
1963 *The Mule in Southern Agriculture*. University Publications in Geography, Volume 15. University of California Press, Berkeley.

Landon, David B.
2005 Zooarchaeology and Historical Archaeology: Progress and Prospects. *Journal of Archaeological Method and Theory* 12(1):1-36.

Langdon, John
1982 The Economics of Horses and Oxen in Medieval England. *The Agricultural History Review* 30(1):31-40.

Langdon, John
1986 *Horses, Oxen and Technological Innovation: The Use of Draught Animals in English Farming from 1066-1500*. Cambridge University Press, Cambridge.

Lawrence, Peter R.
1985 A Review of the Nutrient Requirements of Draught Oxen. In *Draught Animal Power for Production: Proceedings of an International Workshop Held at James*

Cook University, Townsville, Queensland, Australia 10-6 July 1985, edited by J.W. Copland, pp. 59-63. Australian Centre for International Agricultural Research, Canberra.

Lazo, Alfonso
1994 Social Segregation and the Maintenance of Social Stability in a Feral Cattle Population. *Animal Behaviour* 48(5):1133-1141.

Lee, Jean B.
2001 Mount Vernon Plantation: A Model for the Republic. In *Slavery at the Home of George Washington*, edited by Philip Schwarz, pp. 13-45. Mount Vernon Ladies' Association, Mount Vernon, Virginia.

Lee, Jean B., editor
2006 *Experiencing Mount Vernon: Eyewitness Accounts, 1784-1865*. University of Virginia Press, Charlottesville.

LeMoine, Genevieve, James Helmer, and Don Hanna
1995 Altered States: Human-Animal Transformational Images in Dorset Art. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 38-49. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Leng, R.A.
1985 Muscle Metabolism and Nutrition in Working Ruminants. In *Draught Animal Power for Production: Proceedings of an International Workshop Held at James Cook University, Townsville, Queensland, Australia 10-6 July 1985*, edited by J.W. Copland, pp. 69-77. Australian Centre for International Agricultural Research, Canberra.

Levine, M.A.
1982 The Use of Crown Height Measurements and Eruption-Wear Sequences to Age Horse Teeth. In *Ageing and Sexing Animal Bones from Archaeological Sites*, edited by B. Wilson, C. Grigson, and S. Payne, pp.223-250. BAR British Series 109, British Archaeological Reports, Oxford.

Levine, Marsha A.
2005 Domestication and Early History of the Horse. In *The Domestic Horse: The Origins, Development, and Management of its Behaviour*, edited by D. S. Mills and S.M. McDonnell, pp. 5-22. Cambridge University Press, Cambridge.

Levy, Janet E.
1995 Animals Good to Think: Bronze Age Scandinavia and Ohio Hopewell. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 9-19. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Lewis, Kenneth E.
1985 Plantation Layout and Function in the South Carolina Lowcountry. In *The Archaeology of Slavery and Plantation Life*, edited by Theresa A. Singleton, Pp. 35-65. Academic Press, Inc., Orlando.

Lewis, Lynne G.
1978 *Drayton Hall: Preliminary Archaeological Investigations at a Lowcountry Plantation*. National Trust for Historic Preservation, Office of Historic Properties. University Press of Virginia, Charlottesville.

Littlefield, Daniel C.
1991 *Rice and Slaves: Ethnicity and the Slave Trade in Colonial South Carolina*. University of Illinois Press, Urbana.

Lott, Dale F. and Benjamin L. Hart
1979 Applied Ethology in a Nomadic Cattle Culture. *Applied Animal Ethology* 5:309-319.

Lynghaug, Fran
2009 *The Official Horse Breeds Standards Guide: The Complete Guide to the Standards of All North American Equine Breed Associations*. Voyageur Press, Minneapolis, Minnesota.

MacDonald, Kevin C.
1995 Why Chickens? The Centrality of the Domestic Fowl in West African Ritual and Magic. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 50-56. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Main, Gloria L.
1975 Probate Records as a Source for Early American History. *The William and Mary Quarterly* 32(1):89-99.

Manca, Joseph
2012 *George Washington's Eye: Landscape, Architecture, and Design at Mount Vernon*. Johns Hopkins University Press, Baltimore, Maryland.

Marciniak, Arkadiusz and Joshua Pollard
2015 Animals and Social Relations. In *The Oxford Handbook of Neolithic Europe*, edited by Chris Fowler, Jan Harding, and Daniela Hofmann, pp. 745-759. Oxford University Press, Oxford.

Marshall, Fiona and Lior Weissbrod
2011 Domestication Processes and Morphological Change: Through the Lens of the Donkey and African Pastoralism. *Current Anthropology* 52(S4):S397-S413.

Mayer-Kuester, Ulrike
2006 Problems and Possibilities of Reconstructing Scandinavian Saddles of the Migration Period. In *Horses and Humans: The Evolution of Human-Equine Relationships*, edited by Sandra L. Oslen, Susan Grant, Alice M. Choyke, and László Bartosiewicz, pp. 245-261. BAR International Series 1560. Archaeopress, Oxford.

McCartney, Martha W.
2000a *Documentary History of Jamestown Island, Volume 1: Narrative History*. Jamestown Archaeological Assessment 1992-1996. National Park Service; Colonial Williamsburg Foundation; College of William & Mary. Prepared for: Colonial National Historical Park, National Park Service, U.S. Department of the Interior, Cooperative Agreement CA-4000-2-1017, Williamsburg, Virginia.

McCartney, Martha W.
2000b *Documentary History of Jamestown Island, Volume II: Land Ownership*. Jamestown Archaeological Assessment 1992-1996. National Park Service; Colonial Williamsburg Foundation; College of William & Mary. Prepared for: Colonial National Historical Park, National Park Service, U.S. Department of the Interior, Cooperative Agreement CA-4000-2-1017, Williamsburg, Virginia.

McCartney, Martha
2000c *Documentary History of Jamestown Island, Volume III: Biographies of Owners and Residents*. Jamestown Archaeological Assessment 1992-1996. National Park Service; Colonial Williamsburg Foundation; College of William & Mary. Prepared for: Colonial National Historical Park, National Park Service,

U.S. Department of the Interior, Cooperative Agreement CA-4000-2-1017, Williamsburg, Virginia.

McWatters, Lorne
1986 Historical Background. In *Oxon Hill Manor Archaeological Site Mitigation Project*, edited by Patrick H. Garrow and Thomas R. Wheaton, Jr., Pp.45-170. Submitted to Maryland Department of Transportation State Highway Administration, Contract No. P.878 255-512. Copies available from Maryland Archaeological Conservation Laboratory, St. Leonard, Maryland.

Meaders, Daniel E.
1975 South Carolina Fugitives as Viewed Through Local Colonial Newspapers with Emphasis on Runaway Notices 1732-1801. *The Journal of Negro History* 60(2): 288-319.

Menard, Russell R.
1973 Farm Prices for Maryland Tobacco, 1659-1710. *Maryland Historical Magazine* 68:80-85.

Menard, Russell R.
1976 A Note on Chesapeake Tobacco Prices, 1618-1660. *Virginia Magazine of History and Biography* 84:401-410.

Miller, Henry Michael
1984 *Colonization and Subsistence Change on the 17th Century Chesapeake Frontier*. Ph.D. dissertation, Department of Anthropology, Michigan State University, East Lansing, Michigan. University Microfilms, Ann Arbor.

Miller, Laura J.
2003 Secondary Products and Urbanism in South Asia: The Evidence for Traction at Harappa. In *Indus Ethnobiology: New Perspectives from the Field*, edited by Steven A. Weber and William R. Belcher, pp. 251-325. Lexington Books, Lanham, Maryland.

Miller, Laura J.
2004 *Urban Economies in Early States: The Secondary Products Revolution in the Indus Civilization*. PhD dissertation, Department of Anthropology, New York University, New York. University Microfilms, Ann Arbor.

Miller, Lynn R.

2004 *Work Horse Handbook, Second Edition*. Small Farmer's Journal Inc, Sisters, Oregon.

Milne, Claudia and Pamela Crabtree
2000 Revealing Meals: Ethnicity, Economic Status, and Diet at Five Points, 1800-1860. In *Tales of the Five Points: Working Class Life in Nineteenth Century New York. Volume II: An Interpretive Approach to Working Class Life*, edited by Rebecca Yamin, pp. 130-196. General Services Administration, New York.

Milne, Claudia and Pamela Crabtree
2001 Prostitutes, a Rabbi, and a Carpenter – Dinner at the Five Points in the 1830s. *Historical Archaeology* 35(3):31-48.

Moore, John H.
1961 The Ox in the Middle Ages. *Agricultural History* 35(2):90-93.

Moorhead, Max L.
1957 Spanish Transportation in the Southwest, 1540-1856. *New Mexico Historical Review* 32(2): 107-122

Morey, Darcy F.
2006 Burying Key Evidence: the Social Bond Between Dogs and People. *Journal of Archaeological Science* 33:158-175.

Morgan, Philip
1987 Three Planters and Their Slaves: Perspectives on Slavery in Virginia, South Carolina, and Jamaica, 1750-1790. In *Race and Family in the Colonial South*, edited by Withrop D. Jordan and Sheila L. Skemp, pp. 37-79. University Press of Mississippi, Jackson.

Morgan, Philip D.
1991 Slaves and Livestock in Eighteenth-Century Jamaica: Vineyard Pen, 1750-1751. Paper presented at the Commonwealth Center for the Study of American Culture, College of William and Mary, October 11, 1991. Manuscript on file, Rockefeller Library, Colonial Williamsburg Foundation.

Morgan, Philip. D.
1998 *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake & Lowcountry*. University of North Carolina Press, Chapel Hill.

Mullin, Molly H.

1999 Mirrors and Widows: Sociocultural Studies of Human-Animal Relationships. *Annual Review of Anthropology* 28:201-224.

Norman, Neil L
2014 Pythons, Pigs, and Political Process in the Hueda Kingdom, Benin, West Africa AD 1650-1727. In *Animals and Inequality in the Ancient World*, edited by Benjamin S. Arbuckle and Sue Ann McCarty, pp. 295-314. University Press of Colorado, Boulder.

O'Connor, T.P.
1997 Working at Relationships: Another Look at Animal Domestication. *Antiquity* 71:149-156.

O'Steen, Lisa (with contributions by Susan Eigen)
1986 Faunal Analysis. In *Oxon Hill Manor Archaeological Site Mitigation Project*, edited by Patrick H. Garrow and Thomas R. Wheaton, Jr., Pp.555-642. Garrow and Associates. Submitted to The Maryland Department of Transportation State Highway Administration, Contract No. P-878-255-372. Copies available from Maryland Archaeological Conservation Lab, St. Leonard, Maryland.

Olsen, Sandra L.
2006 Early Horse Domestication: Weighing the Evidence. In *Horses and Humans: The Evolution of Human-Equine Relationships*, edited by Sandra L. Oslen, Susan Grant, Alice M. Choyke, and László Bartosiewicz, pp. 81-113. BAR International Series 1560. Archaeopress, Oxford.

Oma, Kristin Armstrong
2013 Human-Animal Meeting Points: Use of Space in the Household Arena in Past Societies. *Society & Animals* 21:162-177.

Orser, Charles E., Jr.
1988 The Archaeological Analysis of Plantation Society: Replacing Status and Caste with Economics and Power. *American Antiquity* 53(4):735-751

Orser, Charles E., Jr.
1990 Archaeological Approaches to New World Plantation Slavery. *Archaeological Method and Theory* 2:111-154.

Ortner, Sherry B.
2001 Commentary: Practice, Power, and the Past. *Journal of Social Archaeology* 1(2):271-278.

Osborn, Ann
1990 Eat and be Eaten: Animals in U'wa (Tunebo) Oral Tradition. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 140-158. Unwin Hyman, London.

Otto, John Solomon
1984 Traditional Cattle-Herding Practices in Southern Florida. *The Journal of American Folklore* 97(385):291-309.

Otto, John S.
1986 The Origins of Cattle-Ranching in Colonial South Carolina, 1670-1715. *The South Carolina Historical Magazine* 87(2):117-124.

Otto, John Solomon
1987 Livestock-Raising in Early South Carolina, 1670-1700: Prelude to the Rice Plantation Economy. *Agricultural History* 61(4):13-24.

Owsley, Douglas W. and Amanda M. Camp
2008 Osteological Examination of Human Skeletons from Nick's Parking Lot. Manuscript on file, Department of Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Oxford English Dictionary
2016 *Oxford English Dictionary*. Oxford University Press, Oxford.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1784 Letter to Robert Townsend Hooe from George Washington, July 18, 1784. Confederation Series (1 January 1784-23 September 1788), Volume 2 (18 July 1784 – 18 May 1785). Electronic document, http://rotunda.upress.virginia.edu.proxy.wm.edu/founders/GEWN-04-02-02-0001, accessed 12 December 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1785 Letter from George Washington to Matthew Campbell. Confederation Series (1 January 1784 – 23 September 1788), Volume 2 (18 July 1784 – 18 May 1785). Electronic document, http:// rotunda.upress.virginia.edu/founders/GEWN-04-02-02-0200, accessed April 17, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1786a Diary entry, February 18, 1786. Diaries (11 March 1748–13 December 1799), Volume 4 (1 September 1784–30 June 1786). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-01-04-02-0003-0002-0018, accessed 10 September 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1786b Diary entry, August 3, 1786. Diaries (11 March 1748 – 13 December 1799), Volume 5 (1 July 1786 – 31 December 1789). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-01-05-02-0001-0002-0003, accessed September 10, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1786c Letter to Arthur Young from George Washington, August 6, 1786. Confederation Series (1 January 1748 – 23 September 1788), Volume 4 (2 April 1786 – 31 January 1787). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-04-04-02-0185, accessed October 27, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1786d Diary entry, December 30, 1786. Diaries (11 March 1748–13 December 1799), Volume 5 (1 July 1786–31 December 1789). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-01-05-02-0001-0006-0030, accessed 10 September 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1786e Diary entry, December 7, 1786. Diaries (11 March 1748 – 13 December 1799), Volume 5 (1 July 1786 – 31 December 1789). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-01-05-02-0001-0006-0007, accessed September 10, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1787a Letter to Arthur Young, November 1, 1787. Confederation Series (1 January 1784-23 September 1788), Volume 5 (1 February 1787-31 December 1787).

Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-04-05-02-0372, accessed October 27, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1788 Letter to Arthur Young, December 4, 1788. Presidential Series (24 September 1788 – 30 September 1794), Volume 1 (24 September 1788 – 31 March 1789). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-01-02-0120, accessed 27 October 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1792 Letter to Arthur Young, June 18, 1792. Presidential Series (24 September 1788 – 30 September 1794), Volume 10 (1 March 1792 – 15 August 1792). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-10-02-0308, accessed October 27, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793a Letter to Anthony Whitting from George Washington, January 13-14, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 11 (16 August 1792 – 15 January 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-11-02-0396, accessed March 6, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793b Letter to Anthony Whitting from George Washington, June 2, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 13 (1 June – 31 August 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-13-02-0005, accessed October 8, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793c Letter to Howell Lewis from George Washington, August 4, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 13 (1 June – 31 August 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-13-02-0233, accessed October 8, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793d Letter to Howell Lewis from George Washington, August 18, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 13 (1 June-31 August 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-13-02-0322, accessed March 6, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793e Letter to Howell Lewis from George Washington, August 25, 1793. Presidential Series (24 September 1788-30 September 1794), Volume 13 (1 June – 31 August 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-13-02-0364, accessed March 6, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793f Agreement with William Pearce, September 23, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 14 (1 September – 31 December 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-14-02-0082, accessed March 6, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793g Letter to Arthur Young from George Washington, December 12, 1793. Presidential Series (24 September 1788-30 September 1794), Volume 14 (1 September – 31 December 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-14-02-0337, accessed October 8, 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]
1793h Letter to William Pearce from George Washington, December 23, 1793. Presidential Series (24 September 1788 – 30 September 1794), Volume 14 (1 September – 31 December 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-14-02-0377, accessed 08 October 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1793i Letter from Howell Lewis to George Washington, August 14, 1793. Presidential Series (24 September 1788–30 September 1794), Volume 13 (1 June–31 August 1793). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-13-02-0301, accessed March 6, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1794 Letter to William Pearce from George Washington, January 19, 1794. Presidential Series (24 September 1788 – 30 September 1794), Volume 15 (1 January- 30 April 1794). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-05-15-02-0067, accessed 08 October 2014.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1798 Letter from James Anderson to George Washington, November 7, 1798. Retirement Series (4 March 1797 – 13 December 1799), Volume 3 (16 September 1798 – 19 April 1799). Electronic document, http://rotunda.upress.virginia.edu/founders/GEWN-06-03-02-0133, accessed March 4, 2015.

The Papers of George Washington Digital Edition, edited by Theodore J. Crackel [PGWDE]

1799 Enclosure: Washington's Plants for His River, Union, and Muddy Hole Farms, December 10, 1799. Retirement Series (4 March 1797–13 December 1799), Volume 4 (20 April 1799–13 December 1799). Electronic document, http://rotunda.upress.virginia.edu.proxy.wm.edu/founders/GEWN-06-04-02-0403-0002, accessed October 26, 2015.

Pargas, Damian Alan

2010 *The Quarters and the Fields: Slave Families in the Non-Cotton South*. University Press of Florida, Gainesville.

Payne, Sebastian

1973 Kill-Off Patterns in Sheep and Goats: The Mandibles from Aşvan Kale. *Anatolian Studies* 23:281-303.

Pearson, R. Anne

1985 Physiological Changes Associated with Work: Some Lessons from the Horse. In Draught Animal Power for Production, Proceedings of an *International*

Workshop Held at James Cook University, Townsville, Queensland, Australia, 10-16 July 1985, edited by J.W. Copland, pp. 51-56. Australian Centre for International Agricultural Research, Canberra.

Phillips, C.J.C.
1993 *Cattle Behaviour*. Farming Press, Ipswich, United Kingdom.

Phillips, Ulrich B.
1915 Slave Crime in Virginia. *The American Historical Review* 20 (2):336-340.

Pogue, Dennis J.
1994 Mount Vernon: Transformation of an Eighteenth-Century Plantation System. In *Historical Archaeology of the Chesapeake*, edited by Paul A. Shackel and Barbara J. Little, Pp. 101-114. Smithsonian Institution Press, Washington.

Pogue, Dennis J.
2002 The Domestic Architecture of Slavery at George Washington's Mount Vernon. *Winterthur Portfolio* 37(1):3-22.

Pogue, Dennis J.
2005 Interpreting the Dimensions of Daily Life for the Slaves Living at the President's House and at Mount Vernon. *The Pennsylvania Magazine of History and Biography* 129(4):433-443.

Pomeroy, Samuel Wyllys
1825 A Dissertation on the Mule. *The American Farmer* 7(22):169-173

Poole, Kristopher
2013 Horses for Courses? Religious Change and Dietary Shifts in Anglo-Saxon England. *Oxford Journal of Archaeology* 32(3):319-333.

Proops, Leanne, Faith Burden, Britta Osthaus
2009 Mule Cognition: A Case of Hybrid Vigor? *Animal Cognition* 12:75-84.

Proops, Leanne, Faith Burden, and Britta Osthaus
2012 Social Relations in a Mixed Group of Mules, Ponies, and Donkeys Reflect Differences in Equid Type. *Behavioural Processes* 90:337-342.

Reinhardt, Catherine, Annie Reinhardt, and Viktor Reinhardt
1986 Social Behaviour and Reproductive Performance in Semi-Wild Scottish Highland Cattle. *Applied Animal Behavior Science* 15:125-136.

Reinhardt, Viktor and Annie Reinhardt
1981 Cohesive Relationships in a Cattle Herd (*Bos indicus*). *Behaviour* 77(3):121-151.

Reitz, Elizabeth J.
1986 Urban/ Rural Contrasts in Vertebrate Fauna from the Southern Atlantic Coastal Plain. *Historical Archaeology* 20 (2):47-58.

Reitz, Elizabeth J.
1995 Pork on the Southern Coastal Plain: Nutrition or Symbol? In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 79-89. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Reitz, Elizabeth and Nicholas Honerkamp
1983 British Colonial Subsistence Strategy on the Southeastern Coastal Plain. *Historical Archaeology* 17(2):4-26.

Reitz, Elizabeth J. and Barbara Ruff
1994 Morphometric Data for Cattle from North America and the Caribbean Prior to the 1850s. *Journal of Archaeological Science* 21:699-713.

Reitz, Elizabeth J. Barbara L. Ruff, and Martha A. Zierden
2006 Pigs in Charleston, South Carolina: Using Specimen Counts to Consider Status. *Historical Archaeology* 40(4):104-124.

Rossel, Stine, Fiona Marshall, Joris Peters, Tom Pilgram, Matthew D. Adams, and David O'Connor
2008 Domestication of the Donkey: Timing, Processes, and Indicators. *Proceedings of the National Academy of Sciences of the United States of America* 105(10):3715-3720.

Roy Rosenzweig Center for History and New Media
2006 Probing the Past. Online document, http://chnm.gmu.edu/probateinventory/index.php, accessed 20 February 2016.

Russell, Nerissa
2002 The Wild Side of Animal Domestication. *Society & Animals* 10(30):285-302.

Russell, Nerissa
2012 *Social Zooarchaeology: Humans and Animals in Prehistory*. Cambridge University Press, New York.

Russo, Jean B. and J. Elliott Russo
2012 *Planting an Empire: The Early Chesapeake in British North America*. The Johns Hopkins University Press, Baltimore, Maryland.

Ryan, Kathleen and Pam J. Crabtree (editors)
1995 *The Symbolic Role of Animals in Archaeology*. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Salley, Alexander S., Jr. (editor)
1911 *Narratives of Early Carolina, 1650-1708*. Charles Scribner's Sons, New York.

Salley, A.S., Jr.
1912 Stock Marks Recorded in South Carolina, 1695-1721. *The South Carolina Historical and Genealogical Magazine* 13(3):126-131.

Samford, Patricia
1996 The Archaeology of African-American Slavery and Material Culture. *The William and Mary Quarterly* 53 (1):87-114.

Savory, Theodore H.
1970 The Mule. *Scientific American* 223(6): 102-109

Schwabe, Calvin W.
1994 Animals in the Ancient World. In *Animals and Human Society: Changing Perspectives*, edited by Aubrey Manning and James Serpell, pp.36-58. Routledge, New York.

Scott, Arthur P.
1930 *Criminal Law in Colonial Virginia*. The University of Chicago Press, Chicago.

Seetah, Krish
2005 Butchery as a Tool for Understanding the Changing Views of Animals: Cattle in Roman Britain. In *Just Skin and Bones? New Perspectives on Human-Animal Relations in the Historic Past*, edited by Aleksander Pluskowski, pp. 1-8. BAR International Series 1410. Archaeopress, Oxford.

Shackel, Paul A. and Barbara J. Little
1994 Plantation and Landscape Studies. In *Historical Archaeology of the Chesapeake*, edited by Paul A. Shackel and Barbara J. Little, pp. 97-100. Smithsonian Institution Press, Washington, D.C.

Shanklin, Eugenia
1990 The Track of the Python: a West African Origin Story. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 204-214. Unwin Hyman, London.

Shepherd, Deborah J.
1995 Bear, Elk, and Fish Symbolism in Finnish Contexts. In *The Symbolic Role of Animals in Archaeology*, edited by Kathleen Ryan and Pam J. Crabtree, pp. 27-37. MASCA Research Papers in Science and Archaeology, Volume 12, MASCA, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania.

Silliman, Stephen
2001 Agency, Practical Politics, and the Archaeology of Culture Contact. *Journal of Social Archaeology* 1(2):190-209.

Silver, I.A.
1970 The Ageing of Domestic Animals. In *Science in Archaeology: A Survey of Progress and Research*, edited by Don Brothwell and Eric Higgs, pp. 283-302. Praeger Publishers, New York.

Silver, Timothy
2007 Learning to Live with Nature: Colonial Historians and the Southern Environment. *The Journal of Southern History* 73(3):539-552.

Simoons, Frederick J.
1994 *Eat Not This Flesh: Food Avoidances from Prehistory to the Present, Second Edition*. The University of Wisconsin Press, Madison, Wisconsin.

Singleton, Theresa A.
1990 The Archaeology of the Plantation South: A Review of Approaches and Goals. *Historical Archaeology* 24(4):70-77.

Singleton, Theresa A.

1995 The Archaeology of Slavery in North America. *Annual Review of Anthropology* 24:119-140.

Sisson, Septimus and James Daniels Grossman
1953 *The Anatomy of Domestic Animals, Fourth Edition*. W.B. Saunders Company, Philadelphia.

Sluyter, Andrew
2012 *Black Ranching Frontiers: African Cattle Herders of the Atlantic World, 1500-1900*. Yale University Press, New Haven, Connecticut.

Smith, Sally V.
2009 Towards a Social Archaeology of the Late Medieval English Peasantry: Power and Resistance at Wharram Percy. *Journal of Social Archaeology* 9(3):391-416.

Sørensen, Madeleine Pinault
2007 Portraits of Animals, 1600-1800. In *A Cultural History of Animals in the Age of Enlightenment*, edited by Matthew Senior, Pp. 157-196. Berg, New York, New York.

Sowell, B.F., J.C. Mosley, and J.G.P. Bowman
1999 Social Behaviour of Grazing Beef Cattle: Implications for Management. *Proceedings of the American Society of Animal Science* 1999:1-6.

Spencer-Wood, Suzanne M. and Sherene Baugher
2010 Introduction to the Historical Archaeology of Powered Cultural Landscapes. *International Journal of Historical Archaeology* 14:463-474.

Stewart Mart A.
1991 "Whether Wast, Deodand, or Stray": Cattle, Culture, and the Environment in Early Georgia. *Agricultural History* 65(3):1-28.

Svensson, Emma M, Anders Götherström, and Maria Vretemark
2008 A DNA Test for Sex Identification in Cattle Confirms Osteometric Results. *Journal of Archaeological Science* 35:942-946.

Swart, Sandra
2003 Riding High – Horses, Power and Settler Society, c. 1654-1840. *Environmental History* 29:47-63.

Sweig, Donald M.

1982 *Northern Virginia Slavery: A Statistical and Demographic Investigation*. Ph.D. dissertation, Department of History, College of William and Mary, Williamsburg, Virginia. University Microfilms, Ann Arbor.

Sykes, Naomi
2007 Taking Sides: the Social Life of Venison in Medieval England. In *Breaking and Shaping Beastly Bodies: Animals as Material Culture in the Middle Ages*, edited by Aleksander Pluskowski, pp. 149-160. Oxbow Books, Oxford.

Szynkiewicz, Slawoj
1990 Sheep Bone as a Sign of Human Descent: Tibial Symbolism among the Mongols. In *Signifying Animals: Human Meaning in the Natural World*, edited by R. G. Willis, pp. 74-84. Unwin Hyman, London.

Telldahl, T., E.M. Svensson, A. Götherström, and J. Storå
2012 Osteometric and Molecular Sexing of Cattle Metapodia. *Journal of Archaeological Science* 39: 121-127

Terrell, John Edward, John P. Hart, Sibel Barut, Nicoletta Cellinese, Antonio Curet, Tim Denham, Chapurukha M. Kusimba, Kyle Latinis, Rahul Oka, Joel Palka, Mary E. D. Pohl, Kevin O. Pope, Patrick Ryan Williams, Helen Haines, and John E. Staller
2003 Domesticated Landscapes: The Subsistence Ecology of Plant and Animal Domestication. *Journal of Archaeological Method and Theory* 10(4):323-368.

Thomas, Brian W.
1998 Power and Community: The Archaeology of Slavery at the Hermitage Plantation. *American Antiquity* 63(4):531-551.

Thomas, Richard and Martin Locock
2000 Food for the Dogs? The Consumption of Horseflesh at Dudley Castle in the Eighteenth Century. *Environmental Archaeology* 5:83-91.

Thomas, Robin N. W.
1988 A Statistical Evaluation of Criteria Used in Sexing Cattle Metapodials. *ArchaeoZoologia* 2(1-2):83-92.

Upex, Beth and Keith Dobney
2012 More Than Just Mad Cows: Exploring Human-Animal Relationships Through Animal Paleopathology. In *A Companion to Paleopathology*, edited by Anne L. Grauer, pp. 191-213. Wiley-Blackwell, Malden, Massachusetts.

Upton, Dell
1984 White and Black Landscapes in Eighteenth-Century Virginia. *Places* 2(2): 59-72.

Vitt, V.O.
1952 Horses of the Pazyryk Burial Mounds. *Soviet Archaeology* 16:163-205.

Vlach, John Michael
1993 *Back of the Big House: The Architecture of Plantation Slavery*. University of North Carolina Press, Chapel Hill.

Von den Driesch, Angela
2004 *A Guide to the Measurement of Animal Bones from Archaeological Sites*. Peabody Museum Bulletin 1. Peabody Museum Press, Cambridge, Massachusetts.

Wall, Charles C.
1945 Notes on the Early History of Mount Vernon. *The William and Mary Quarterly* 2(2):173-190.

Walsh, Lorena S.
1989 Plantation Management in the Chesapeake, 1620-1820. *The Journal of Economic History* 49(2):393-406.

Walsh, Lorena S.
2001 Land Use, Settlement Patterns, and the Impact of European Agriculture, 1620-1820. In *Discovering the Chesapeake: The History of an Ecosystem*, edited by Philip D. Curtin, Grace S. Brush, and George W. Fisher, pp. 220-248. Johns Hopkins University Press, Baltimore, Maryland.

Walsh, Lorena S.
2010 *Motives of Honor, Pleasure, and Profit: Plantation Management in the Colonial Chesapeake, 1607-1763*. University of North Carolina Press, Chapel Hill.

Walsh, Lorena S, Ann Smart Martin, and Joanne Bowen
1997 *Provisioning Early American Towns; The Chesapeake: A Multidisciplinary Study*. Colonial Williamsburg Foundation. Submitted to National Endowment for the Humanities, NEH Grant RO-22643-93. Copies available from Colonial Williamsburg Foundation, Williamsburg, Virginia.

Waring, George H.
1983 *Horse Behavior: The Behavioral Traits and Adaptations of Domestic and Wild Horses, Including Ponies*. Noyes Publications, Park Ridge, New Jersey.

Watson, J.P.N.
1978 The Interpretation of Epiphyseal Fusion Data. In *Research Problems in Zooarchaeology*, edited by D.R. Brothwell, K.D. Thomas, and Juliet Clutton-Brock, pp. 97-101. University College London Institute of Archaeology Publications, Vol. 20, Occasional Publication No. 3. Routledge, London.

Webber, Jennifer J. Z., and Elizabeth J. Reitz
1999 Animal use on the Eighteenth Century Frontier: Stobo Plantation, South Carolina. Manuscript on file, Zooarchaeology Laboratory, Georgia Museum of Natural History, University of Georgia, Athens.

Weir, Robert M.
1983 *Colonial South Carolina: A History*. KTO Press, Millwood, New York.

Wells, Camille
1993 The Planter's Prospect: Houses, Outbuildings, and Rural Landscapes in Eighteenth-Century Virginia. *Winterthur Portfolio* 28(1):1-31.

Wells, S.M. and V.B. Goldschmidt-Rothschild
1979 Social Behavior and Relationships in a Herd of Camargue Horses. *Zeitschrift für Tierpsychologie* 49(4):363-380.

W.G.S.
1895 Racing in Colonial Virginia. *The Virginia Magazine of History and Biography* 2(3):293-305.

Wheaton, Thomas R., Jr.
1986 Introduction. In *Oxon Hill Manor Archaeological Site Mitigation Project*, edited by Patrick H. Garrow and Thomas R. Wheaton, Jr., Pp.1-14. Submitted to Maryland Department of Transportation State Highway Administration, Contract No. P.878 255-512. Copies available from Maryland Archaeological Conservation Laboratory, St. Leonard, Maryland.

Willis, R.G. (editor)
1990 *Signifying Animals: Human Meaning in the Natural World*. Unwin Hyman, London.

Wilson, Bob

1994 Mortality Patterns, Animal Husbandry and Marketing in and Around Medieval and Post-Medieval Oxford. In *Urban-Rural Connexion: Perspectives from Environmental Archaeology*, edited by A. R. Hall and H. K. Kenward, Pp. 103-115. Oxbow Books, Oxford.

Wilson, Bob and Peter Edwards

1993 Butchery of Horse and Dog at Witney Palace, Oxfordshire, and the Knackering and Feeding of Meat to Hounds during the Post-Medieval Period. *Post-Medieval Archaeology* 27:43-56.

Windley, Lathan Algerna

1995 *A Profile of Runaway Slaves in Virginia and South Carolina from 1730 through 1787*. Garland Publishing, New York.

Zeder, Melinda A.

2012a The Domestication of Animals. *Journal of Anthropological Research* 68(2):161-190.

Zeder, Melinda A.

2012b Pathways to Animal Domestication. In *Biodiversity in Agriculture: Domestication, Evolution, and Sustainability*, edited by P. Gepts, T.R. Farmula, R.L. Bettinger, S. B. Brush, A.B. Damania. P.E. McGuire, and C.O. Qualset, Pp. 227-259. Cambridge University Press, Cambridge.

Zierden, Martha

2010 Landscape and Social Relations at Charleston Townhouse Sites (1770-1850). *International Journal of Historical Archaeology* 14:527-546.

Zierden, Martha and Ronald Anthony

2006 *Unearthing the Past, Learning for the Future: Archaeology at Drayton Hall, 2005*. Archaeological Contributions 37, The Charleston Museum, Charleston, South Carolina.

Zierden, Martha A. and Ronald W. Anthony

2008 *Drayton Hall: Archaeology at the Privy, 2007*. Archaeological Contributions 40, The Charleston Museum, Charleston, South Carolina.

Zierden, Martha A. and Elizabeth J. Reitz

2009 Animal Use and the Urban Landscape in Colonial Charleston, South Carolina, USA. *International Journal of Historical Archaeology* 13:327-365.

Zierden, Martha A., Jeanne Calhoun, and Debi Hacker-Norton
1985 *Archdale Hall: Investigations of a Lowcountry Plantation*. The Charleston Museum Archaeological Contributions No. 10. Charleston Museum, Charleston, South Carolina.

Zierden, Martha, Suzanne Linder, and Ronald Anthony
1999 *Willtown: An Archaeological and Historical Perspective*. The Charleston Museum Archaeological Contributions No. 27. Charleston Museum, Charleston, South Carolina.