

PREDATOR MANAGEMENT AND COLONIAL CULTURE, 1600-1741

A Study in Historical Ecology

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A Thesis

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The Faculty of the Department of Anthropology

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Master of Arts

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By

Samuel Taylor Elswick

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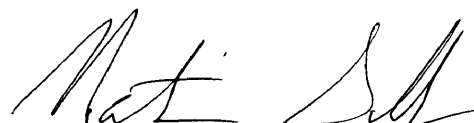
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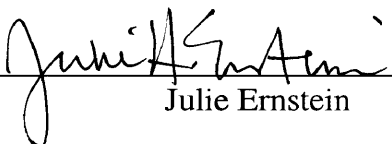
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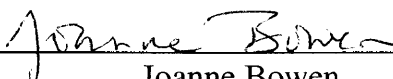
Master of Arts


  
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To Mom, for her inspiration,  
to Sharon for her strength,  
to Dad for his guidance,  
and to Zeke and Brady for their futures.

Also, in memory of my friend,  
Matthew Douglas Horning,  
one of many who died on 11 September 2001.  
He was an example for us all.

## TABLE OF CONTENTS

	Page
Acknowledgements	v
List of Tables	vi
List of Figures	vii
Abstract	viii
Introduction	2
Chapter I: Theory	5
Chapter II: Sheep, Wolves, and Colonists	22
Chapter III: Bounty Hunting	39
Animal Husbandry and Ecological Change	53
Regional Variation	59
Extirpation	68
Chapter IV: Conclusions	81
Bibliography	97
Vita	113

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## LIST OF TABLES

Table		Page
1.	Regional Divisions and Extant County Levy Records	41
2.	Sheep Ownership and Flock Size in York County, Va.	57
3.	Sheep Ownership and Flock Size Percentages in York County, Va.	57

## LIST OF FIGURES

Figure		Page
1.	Map of the Chesapeake Bay	3
2.	Payments for Wolves	18
3.	Certificate for a Wolf's Head from Warwick County, Virginia, 1677	19
4.	Total Number of Wolf Bounty Payments in Virginia, 1645-1741	44
5.	English Settlement and Wolf Hunting, 1645-1741	47
6.	Number of Sheep in York County Probate Inventories, 1645-1741	56
7.	Comparison of Wolf Bounties and the Number of Sheep Owners in York County, Virginia, 1645-1741	60
8.	Comparison of Wolf Bounties in Tidewater Counties, 1690-1700	64
9.	Comparison of Wolf Bounties in the Tidewater and Piedmont, 1725-1741	64
10.	Wolf Bounty Claims in Brunswick County, Virginia, 1732-1741	66
11.	Comparison of Bounties in Spotsylvania and Orange Counties, 1724-1741	66

## ABSTRACT

This research examines the role of human agency in ecological change. Operating under the premise that all humans are both instigators and receptors of ecological change, this thesis discusses how European colonists confronted ecological issues in the Chesapeake region during the seventeenth and early eighteenth centuries.

One such issue that immediately challenged European colonists was the presence of terrestrial predatory species, such as wolves and pumas. These predators had a profound effect on European perceptions of the local environment, and influenced how colonists acted within their local ecosystem to meet their own cultural and economic demands. In the minds of the European invaders, predators wrapped the Chesapeake frontier in a mystique of wildness, a mystique that influenced frontier settlement and expansion, both in the colonial mind and on the native landscape.

Historical and archaeological evidence presented in this paper shows a marked increase in sheep husbandry at the end of the seventeenth century, and this increase is linked to the extirpation of wolves and other predators from local areas. This extirpation was slow and sporadic, and was a result of diminishing food, European expansion, climate change, and bounty hunting.

By analyzing the factors contributing to wolf population fluctuations and eventual extirpation, this study concludes that European colonists did not necessarily adapt to the frontier environment; rather, they endeavored to adapt the frontier environment to suit their own habits of settlement and subsistence. In addition to importing material goods, Europeans were importers of ideas, value systems, and strategies for effective settlement and subsistence. When European ships first entered the Chesapeake Bay, many of these aspects of Old World civilization were incompatible with the frontier environment. For the colonial experiment to succeed, certain environmental characteristics required alteration. Active predator management policies were one component of these endeavors.

PREDATOR MANAGEMENT AND COLONIAL CULTURE, 1600-1741

## INTRODUCTION

This thesis is a study in historical ecology and focuses on humans and wolves in the Chesapeake Bay terrestrial ecosystem, ca. 1600-1741. Proceeding from the premise that all humans are biotic factors of ecological change, this thesis discusses wolf ecology and English predator management strategies to explore the relationship between local ecosystems and cultural development in a frontier situation. Specifically, this thesis will develop two main points. First, the number of bounties claimed for wolves increased during periods of English expansion. Second, the gradual increase of sheep husbandry in English settlements is directly linked to declines in wolf populations.

During the early stages of European New World exploration, wolves were an entrenched component of the Chesapeake Bay watershed's terrestrial ecosystem. Although more successful in habitats west of the fall line, an ecologically significant wolf population also existed in the Tidewater region and on the Delmarva peninsula. Prior to colonization, Chesapeake Native Americans killed wolves to demonstrate their prowess as hunters, to collect skins, bones, and teeth, to consciously preserve the local deer herd, or to capture wolf pups for domestication. In the seventeenth and eighteenth centuries, European colonists, servants, enslaved Africans, and Chesapeake Natives hunted and killed wolves to collect bounty payments from the colonial government, to civilize the landscape, and to preserve their livestock. By the middle nineteenth century, the canine had vanished from most of the Chesapeake Bay watershed.

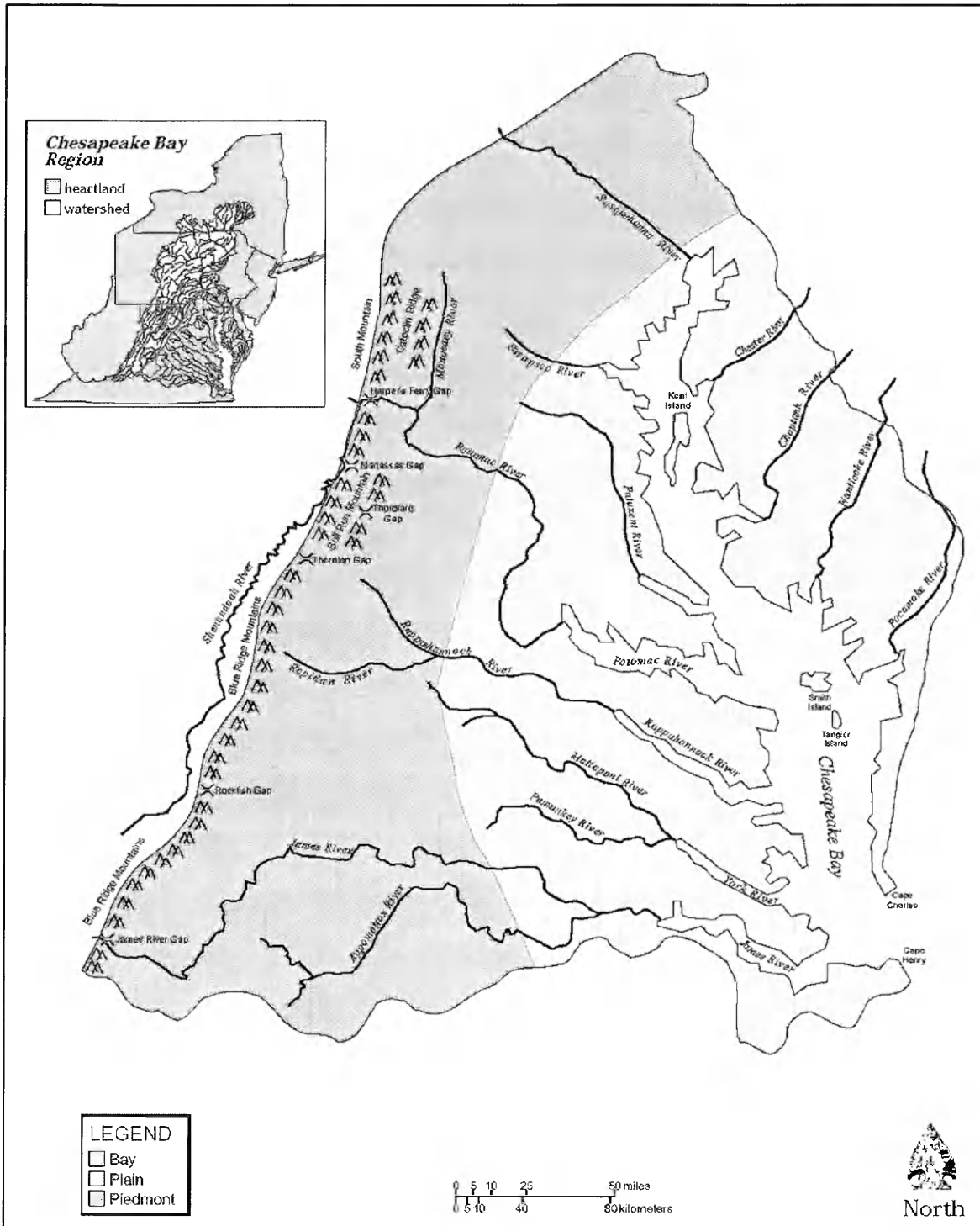


Figure 1. Map of the Chesapeake Bay. From Robert S. Grumet, *Bay, Plain, and Piedmont: A Landscape History of the Chesapeake Heartland from 1.3 Billion Years Ago to 2000*, the Chesapeake Bay Heritage Project (Annapolis: National Park Service, 2000).

Although humans collected hundreds of wolf bounties during the seventeenth and eighteenth centuries, the bounty system was not an efficient or focused method for eradicating wolves. The number of wolves killed for bounties fluctuated each year, and those fluctuations were directly tied to European frontier expansion, animal husbandry practices, and climatic change. This thesis seeks to explain these fluctuations in the number of bounties claimed, and how the presence and eventual extirpation of wolves affected colonial settlement and animal husbandry practices. Discussion will center in the colonial boundaries of Virginia and Maryland, from the beginning of English colonization to the year 1741.

This thesis will proceed chronologically and thematically. Predictably, the first chapter will be a discussion of the historical, ecological, and anthropological theories and presuppositions driving this research. This chapter will also briefly discuss sources and methods. Chapter 2 focuses on the reciprocal relationships between the local ecosystem (particularly the wolves), colonial predator management policies, and the historical development of animal husbandry. The third chapter engages the historical progression of wolf bounty hunting practices and discusses the periodic fluctuations in the number of bounty claims, the effects of colonial frontier expansion, the eventual extirpation of wolves, and the effects of wolves on sheep husbandry. Chapter 4 offers some concluding thoughts, and summarizes the discussion.

## CHAPTER I:

### THEORY

The present study is most closely allied with the interdisciplinary perspectives and methodological approaches of historical ecology, integrated with the anthropological theories of frontier historical development and inter-cultural frontier contact. This chapter will discuss the primary tenets of both, and will combine them to form a salient theoretical approach.

The emerging analytical tactic called "historical ecology" is the study of past human ecological relationships and how they have proceeded through time. This perspective presumes a link between human history and ecological change, and extends studies of human ecological relationships into the past. Historical ecology emphasizes the interplay between ecology and culture and tries to foster collaboration among related academic disciplines.<sup>1</sup>

The problem with the term "historical ecology" is that it implicitly presumes an ahistorical ecology (i.e., an ecological study that presumes to understand an ecosystem without first understanding its history). This presumption is a falsehood. Winterhalder points out that everything has a narrative past, and the present always bears traces of that

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<sup>1</sup> Carole Crumley, "Forward," in *Advances in Historical Ecology*, ed. William Balée (New York: Columbia University Press, 1998), xii; idem, "Historical Ecology: A Multidimensional Ecological Orientation," chap. in *Historical Ecology: Cultural Knowledge and Changing Landscapes* (Santa Fe: School of American Research Press, 1994), 1-7; William Balée, ed., *Advances in Historical Ecology* (New York: Columbia University Press, 1998), 1-15; Neil L. Whitehead, "Ecological History and Historical Ecology: Diachronic Modeling versus Historical Explanation," *ibid.*, 36.

past.<sup>2</sup> Cultures have histories and individuals have memories. Their histories will influence their cultural development and, consequently, their ecosystems. Conversely, changes in ecosystems will influence human history. In a sense, this idea evokes a softened version of Boas' historical particularism.<sup>3</sup> One cannot divorce human history from ecological history.

The human component of an ecosystem or a landscape is the bailiwick of ecologists, anthropologists, geographers, and, to a lesser degree, historians. Consequently, historical ecology seeks nourishment from all these disciplines. Historical ecology is more than an unrefined mush of related disciplines, however, and it goes beyond a simple "re-bottling and re-labeling of vintage ideas."<sup>4</sup> Theories about how humans relate to the physical world are complicated, and sometimes transcend disciplinary boundaries. Historical ecology is a discrete perspective, combining the most resilient and non-contradictory pillars of other speculative schemes with its own theoretical suppositions. The goal of historical ecology is to study the total environmental, historical, and cultural context of human activities, especially in regard to the human/environment relationship over time.

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<sup>2</sup> Bruce Winterhalder, "Concepts in Historical Ecology," chap. in *Historical Ecology: Cultural Knowledge and Changing Landscapes* (Santa Fe: School of American Research Press, 1994), 18.

<sup>3</sup> Franz Boas developed historical particularism a century ago. Boas perceived all cultures as products of their own history, and cultural development was relative. Where historical ecology differs from Boas is with Boas' view that all cultures are inherently unique, and any similarity between them is the product of cultural exchange. My own brand of historical ecology holds that similar cultural traits could also be due to similar responses to similar environmental conditions, or they may even occur as a random coincidence.

<sup>4</sup> Tristran R. Kidder and William Baléc, "Epilogue," in *Advances in Historical Ecology*, ed. William Baléc, 405.

Historical ecology constructs itself on four premises. First, historical ecology does not view humans and the environment as conceptually discrete entities. Second, like all life forms, *all* humans function as organisms in diverse ecosystems and are biotic factors of ecological change. Humans are subject to (but not always limited by) biological and evolutionary constraints and can adapt to vastly different ecosystems because of their technological and cultural pliability. Third, although historical ecology maintains an anthropocentric point of view, it also encourages studies of the non-human environment<sup>5</sup> to uncover reciprocal relationships. Finally, historical ecology extends studies of ecological relationships into the past, and stipulates that both human cultures and the non-human environment have histories which are inextricably linked.<sup>6</sup>

Understanding the ecosystems of the past is imperative to understanding ecosystems of the present. Changes in ecosystems are rarely sudden, often spanning decades, lifetimes, centuries, or even millennia. The politics of the environment are ever-present in modern society. How scholars, scientists, government officials, and the public understand the ecological characteristics of the past, and how they perceive the relationship between human activities and ecological change, shapes current environmental policy. Colten and Dilsaver agree, stating that, "seldom are impact and

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<sup>5</sup> This thesis will use "environment" to mean the total physical context in which events occur. The atmosphere, biosphere, hydrosphere, and lithosphere are all components of this physical context, as well as all things physical which humans instigate, manipulate, or create.

<sup>6</sup> Dena Dincauze, ed., *Environmental Archaeology*, 18; Clifford Geertz, *After the Fact*, 3; Donald Worster, *The Ends of the Earth*, vii, 6-7, 294; David Hornbeck, Carville Earle, and Christine M. Rodrigue, "The Way We Were: Deployments (and Re-deployments) of Time in Human Geography," in *Concepts in Human Geography*, ed. Carville Earle, Ken Mathewson, and Martin S. Kenzer (Lanham, Md.: Rowman & Littlefield Publishers, 1996).

management discrete or disassociated. One begets the other."<sup>7</sup> Studying past ecosystems is a necessary precursor for understanding and managing present ecosystems.

Reasons for studying past ecosystems go beyond issues of present relevance. Humans maintain an inexplicable curiosity about the worlds of bygone ages. Most cultures attempt to understand current events by placing them in the context of past events, in the form of mythology, oral traditions, written histories, or the scholarship of dedicated academic disciplines. History gives us a sense of place, a definition of purpose, and a feeling of progress. Ultimately, the goal of all who research the past is to make coherent and pertinent statements about our human predecessors and about ourselves. Yet, as Carole Crumley writes, "inasmuch as all human activity inevitably takes place somewhere, it is embedded in a matrix, a context, an environment."<sup>8</sup> The marriage of history and ecology, therefore, is not hard to anticipate. To truly grasp what life was like in the past, we must understand its environmental contexts, and how those contexts changed with time.<sup>9</sup>

Out of this swirling tumult of history and ecology looms a four-towered theoretical castle that is difficult to assail: humans and their environments are conceptually inseparable, environments are not static, humans are one of many agents of

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<sup>7</sup> Craig E. Colten and Lary M. Dilsaver. "Historical Geography of the Environment: A Preliminary Literature Review," in *The American Environment: Interpretations of Past Geographies*, ed. Lary M. Dilsaver and Craig E. Colten (Lanham, MD: Rowman and Littlefield Publishers, Inc., 1992), 9.

<sup>8</sup> Carole Crumley, "Forward," ix.; Donald Worster, *The Ends of the Earth*, vii.

<sup>9</sup> Samuel Elswick, "History?," (Unpublished Research Paper, College of William and Mary, Department of Anthropology, 2001), 10; Tim Ingold, "The Temporality of Landscape," *World Archaeology* 25:2 (October 1993), 152-174.

environmental evolution, and an unbreakable bond exists between history and ecology. The questions for anthropologists, then, are what causes anthropogenic ecological change, how do those changes proceed through time, and how do such changes influence human culture?

Anthropogenic environmental change is most often the result of a biological or cultural response to existing environmental conditions (including other humans). Frequently, the most rapid, most significant, or most obvious anthropogenic ecological changes will occur when a culture's socio-economic or value systems change, when new technologies are introduced, or when one or more diverse cultures expand, collide, and interact. Different religious, cultural, and socio-economic systems will likely interact differently with their environments. If human culture is a prime mover of ecological change, then ecological change will likely accompany cultural change. Consequently, an historical ecology of the Chesapeake region is tightly tied to the processes of inter-cultural frontier contact.

Frontiers present a unique and exciting circumstance for history, archaeology, and anthropology. Certainly, frontiers represent the expansion and collision of cultures, but they are also a vehicle for social variation and experimentation as the frontier populations move farther away from their cultural centers (physically and metaphorically). Frontiers are often volatile and unpredictable as their inhabitants are thrown against diverse and sometimes hostile cultures and environments. Frontiers, therefore, are where humanity, for better or for worse, most poignantly occurs. Studying frontiers can be a fruitful enterprise for those who wish to discover the mysteries of the human condition.

Frontier history and studies of inter-cultural contact have been the epicenter of North American historical and anthropological scholarship for almost a century. The term "frontier" is not inherently self-defining. Typically, scholarly definitions mediate between two extremes: a rigid, clearly defined boundary between civilization and wilderness (e.g., Hadrian's Wall, or the Great Wall of China), or an impossibly broad, ill-defined zone of cultural interaction (e.g., the American West). This thesis supports a more moderate, but more complicated definition: a frontier is a distinct zone of physical and conceptual space in which two or more diverse cultures are in a discernable process of interaction. This zone is not urban, is often sparsely populated, and tends to radiate outward from the administrative borders of an intrusive state system.<sup>10</sup> Environmental characteristics of this geographic zone tend to figure prominently in cultural interaction and development because at least one of the cultures in interaction is adjusting to an unfamiliar landscape, and wants to benefit from that landscape. Benefits can include access and transportation to other areas, natural resource extraction, or a more abstract benefit, such as the perception of individual freedom, property ownership, or self-reliance. Thus, a frontier is

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<sup>10</sup> This working definition is an admixture of several independent theories from many works. A selection follows: Kent G. Lightfoot and Antoinette Martinez. "Frontiers and Boundaries in Archaeological Perspective." *American Review of Anthropology* 24 (1995): 471-492; Daniel Barr. "Beyond the Pale: An Overview of Recent Scholarship Pertaining to the Colonial Backcountry." *The Early America Review* 2 (Fall 1998); Ana Maria Alonso. *Thread of Blood: Colonialism, Revolution, and Gender on Mexico's Northern Frontier* (Tucson: University of Arizona Press, 1995); Brian R. Ferguson and Neil L. Whitehead, eds., *War in the Tribal Zone: Expanding States and Indigenous Warfare* (Santa Fe: School of American Research Press, 1992); Hastings Donnan and Thomas M. Wilson, *Borders: Frontiers of Identity, Nation, and State* (Oxford: Berg, 1999); Gregory H. Nobles, *American Frontiers: Cultural Encounters and Continental Conquest* (New York: Hill and Wong, 1997); Donald Hardesty. "Evolution on the Industrial Frontier." in *The Archaeology of Frontiers and Boundaries*, ed. Stanton W. Green and Stephen M. Perlman (Academic Press, Orlando, Florida, 1985); Kenneth E. Lewis, *The American Frontier: An Archaeological Study of Settlement Pattern and Process* (Academic Press, Orlando, Florida, 1984); David J. Weber and Janc M. Rausch, eds., *Where Cultures Meet: Frontiers in Latin American History* (Wilmington: SR Books, 1994); Roderick Nash. *Wilderness and the American Mind* (New Haven: Yale University Press, 1982).

both a place and a concept, a complicated admixture of temporal, geographic, ecological, social, and cultural characteristics.

No one has been more influential in the creation of popular American frontier concepts than the late nineteenth century historian Frederick Jackson Turner. Turner saw the American frontier wilderness as the central influence on a distinctly American culture. For Turner, the vast, wild, and open spaces of the frontier were the crucible for freedom, democracy, self-reliance, and progress. American culture was forged in the hostile frontier environment as the pioneers advanced westward, conquering nature while bringing civilization and religion to the native inhabitants. For Turner, the frontier made the colonist.<sup>11</sup>

Turner's thesis, while elegant, fails because it does not recognize that it was the colonists that made the frontier, more so than the other way around. The European infiltration into New World ecosystems, and the relationships the newcomers formed among themselves and the indigenous people, changed New World ecosystems much more than New World ecosystems changed colonial European culture.<sup>12</sup> Believing otherwise places too much emphasis on environmental determinism, and uses thinly-veiled ideology to sidestep the overwhelming evidence to the contrary.

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<sup>11</sup> Frederick Jackson Turner. *The Significance of the Frontier in American History*, Irvington Reprint Series (New York: Irvington, 1993). Some examples of critiques are: William G. Robbins. "Laying Siege to Western History: The Emergence of New Paradigms." *Reviews in American History* 19 (1991), 313-331. Earl Pomeroy. "Toward a Reorientation of Western History: Continuity and Environment." *Mississippi Valley History Review* 41 (March 1955): 579-600. David J. Weber. "Turner, the Boltonians, and the Borderlands." *American Historical Review* 91, supplement (February 1986): 66-81; Mark Bassin. "Turner, Solov'ev, and the 'Frontier Hypothesis': The Nationalist Signification of Open Spaces." *Journal of Modern History* 65 (September 1993): 473-511.

<sup>12</sup> David J. Weber. "Turner, the Boltonians, and the Borderlands." 71-72.

Anthropologist Roy A. Rappaport believes that when facing new ecosystems, humans culturally adapt to two environments: the cognitive, or perceived, environment, and the operational, or actual, environment. How humans participate in an ecosystem depends not only on the structure and composition of that ecosystem, but also upon the demands imposed on the local population from the outside, the needs which the local population may fulfill from abroad, the cultural baggage of those who enter it, and what they and their descendents subsequently receive by diffusion or invent themselves. Salzman and Attwood elaborate, suggesting that adaptive strategies are wholly institutionalized within the culture of a given group. In essence, this line of thinking links Julian Steward's cultural ecology<sup>13</sup> with earlier concepts of cultural diffusion—human populations do not exist in a vacuum, and therefore do not always develop ecological strategies independently.<sup>14</sup> The eco-cultural situation in the colonial Chesapeake certainly plays out these ideas.

Jordan and Kaups go even farther and assert that migration to a new environment

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<sup>13</sup> Steward's cultural ecology primarily focused on humans and the development of exploitative or productive technologies, rather than the biological manifestations of evolution and adaptation. His cultural ecology emphasized that cultural and historical forces can also influence technological development, and can be independent of environmental controls. For a cultural ecologist, technological development is not merely a reaction to environmental situations. Instead, culture chooses its environment via technology. Julian Steward, *Evolution and Ecology: Essays on Social Transformation* (Urbana: University of Illinois Press, 1977); idem, *Theory of Culture Change: the Methodology of Multilinear Evolution* (Urbana: University of Illinois Press, 1955); Neil L. Whitehead, "Ecological History and Historical Ecology: Diachronic Modeling versus Historical Explanation," in *Advances in Historical Ecology*, ed. William Balée, 31; Catherine S. Fowler, "Ethnoecology," in *Ecological Anthropology*, ed. Donald L. Hardesty (New York: John Wiley and Sons, 1977), 215-245; Donald L. Hardesty, ed., *Ecological Anthropology* (New York: John Wiley and Sons, 1977), 8-12.

<sup>14</sup> Roy A. Rappaport, "Nature, Culture, and Ecological Anthropology," in *Man, Culture, and Society*, ed. H. L. Shapiro, 2nd ed., (Oxford: Oxford University Press, 1971), 237-267; P.C. Salzman, and D.W. Attwood, "Ecological Anthropology," in *The Encyclopedia of Social and Cultural Anthropology*, ed. Alan Barnard and Jonathan Spencer (London, Routledge, 1996), 169.

will necessarily force a change in adaptive strategy.<sup>15</sup> Growing from Turner's original seeds, anthropologists and historians with similar ideas have expended much ink over the last century to show how the American environment was different from the Old World environment, and those differences were primary influences in how European colonization proceeded. This conclusion is too simplistic and one should not apply it universally. Only when existing ecological strategies fail in a new environment will a culture require new strategies for approaching ecological problems. From a fundamentally ecological standpoint, the North American physical landscape was not drastically different from the environment with which Europeans were already familiar. For this reason, European strategies for using the environmental resources available to them did not grow out of adaptations to a mysterious and unfamiliar environment, but out of what they already knew had been successful in the Old World.<sup>16</sup> In time, European colonists molded the New World frontier to conform to their preconceived strategies for participating in an ecological system. Their obvious objective was to re-create the world with which they were already familiar.

When the English arrived on the New England and Mid-Atlantic shores, they encountered a plentitude of resources that were scarce in the British Isles, and that they and the indigenous inhabitants both wanted. Land, timber, animal products, tobacco,

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<sup>15</sup> Terry G. Jordan and Matti Kaups. *The American Backwoods Frontier: An Ethnic and Ecological Interpretation* (Baltimore: Johns Hopkins University Press, 1989).

<sup>16</sup> The Chesapeake environment was generally a little warmer, a little drier, and contained unfamiliar flora, fauna, and disease. Fundamentally, however, it was quite similar to the temperate ecological zones of Europe and Asia. Europe and the Chesapeake were not as diverse as say, Spain and the Amazon rain forest, England and the Australian outback, or the Netherlands and South Africa.

marine resources, and corn all were objects of English desire, and were plentiful in the New World. Acquiring these resources, both for local needs and to send abroad, demanded cultural interaction. Competition and cultural adjustments were inevitable, especially on the part of the native inhabitants. The sudden arrival of new technologies and agricultural systems (e.g., firearms, large plantations, and domestic animals), rapid alterations in native hunting and trade practices, an increased demand for raw materials, the influx of new languages and religions, and demographic shifts caused by politics, warfare, and disease all contributed to North American cultural transformations. Concurrent changes in human ecological relationships were inevitable.

When woven together, the theories of historical ecology and frontier cultural exchange discussed above become the canvas on which this thesis is painted. The link between theory and praxis is evident. When two or more diverse cultures meet for the first time, the experience will change them as well as their ecosystems. This is especially true if contact is prolonged, either by physical proximity, warfare, commerce, or a combination of the three.

While the difference between humans and other biotic factors of ecological change is that humans can exert rapid and consequential influence over existing environmental conditions, human control is never total. Contrary to the functionalist myth that the natural purpose of culture is to maintain ecological equilibrium, human action in an ecosystem will wobble back and forth along a continuum of degradation and preservation, sometimes causing the utter disintegration of ecological integrity, sometimes maintaining or strengthening that integrity. Either wanton destruction, neutral

exploitation, or conscious management and preservation can be the result, depending upon the population's biological needs and cultural goals at a particular time. The result is not always beneficial to human existence, nor is it always harmful to the environment at large. Even in the total absence of human activity, an environment will change and evolve over time. Contrary to modern sensibilities, such changes are not more "natural" than those which humans alone instigate. Complicating this issue even more are instances where human activities may have altered the rate of an environmental change, but are not the principle motivators of that change.<sup>17</sup>

Sewing together this complex quilt requires an interdisciplinary and ethno-historical approach to studying human ecological relationships. Data sources for this project include the written historical record, archaeological evidence, and current ecological scholarship. Discussions of the evidence will include both qualitative and quantitative analysis.

As with any historical problem, there are limits to the knowledge that modern observers can factually attain. Winterhalder notes that, by claiming that ecology is historical in principle, "we place certain limits on our confidence in prediction, whether it is based on theory, empirical generalization, simulation, or analogy."<sup>18</sup> Because we cannot directly observe the past, we have to do so by proxy, and coaxing adequate evidence from the shadowy crevices of preceding eras is challenging. This is especially

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<sup>17</sup> Neil Roberts, *The Holocene: An Environmental History*, 2nd ed. (Oxford: Blackwell Publishers, 1988), 7; William Cronon, *Changes in the Land*.

<sup>18</sup> Bruce Winterhalder, "Concepts in Historical Ecology," in *Historical Ecology*, ed. Carole Crumley, 36.

true when drawing inferences about circumstances or events that make no explicit appearance in the written historical records. Scholars must therefore impose an order onto the past, one which is focused through the lens of individual experience, subjected to the limits of the available source material, and interpreted like Braille through the blind fingers of modern sensibilities.

For qualitative analysis, this thesis turns toward written historical records, such as travel accounts, natural histories, colonial laws and statutes, letters, diaries, and other textual material. All of these texts are excellent sources for historical descriptions of human activities, attitudes, responses, adaptive strategies, and cultural perceptions related to the environment. For example, some colonial laws directly implemented ecologically-focused policies. Hunting regulations, land use policies, and predator management laws are good examples. Studying the language and context of colonial laws can help a historical ecologist understand how human societies acted upon and reacted to ecological circumstances. However, determining whether such laws were reactions to an existing environmental problem or attempts to preempt one is often tricky business.

Clifford Geertz writes that, in establishing anthropological proof, "Footnotes help, verbatim texts help even more, detail impresses, numbers normally carry the day."<sup>19</sup> In anthropology, quantitative analysis is a necessity. In the case of historical ecology, numbers add a quantifiable sense of realism to the discussion, and allow reasonable identifications of ecological trends such as wildlife population fluctuations.

Unfortunately, reliable, consistent, and ecologically relevant numbers in

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<sup>19</sup> Clifford Geertz, *After the Fact*, 17-18.

seventeenth and eighteenth century documents are hard to come by. This presents a tough issue, but not an insurmountable one. Fortunately, there are quantitative data available that can speak directly to the issues in this thesis, in the form of county levy tax accounts (which include bounty payment records), probate inventories, and archaeologically recovered faunal remains.

Although colonists occasionally mentioned wolves in their letters, journals, and travelogues, the most important textual sources are the bounty laws and the bounty payment records. Throughout the seventeenth and eighteenth centuries, county governments paid colonists to kill specific predatory or nuisance animals such as wolves, bears, foxes, bobcats, pumas, squirrels, and crows. Wolves appear in the records most often. Because the local county courts administered bounty payments, bounty payment records usually appear as part of the county levy tax accounts in the County Court Order Books. Robert Beverley defined a county levy tax in the early eighteenth century as a "tax peculiar to each county, and laid by the justices on all tithable persons, for defraying the charge of their counties, such as the building and repairing of their court houses, prisons, pillories, stocks, &c., and the payment of all services, rendered to the county in general."<sup>20</sup> The county clerk usually itemized these expenses in the levy records. A typical bounty tally is shown in Figure 2.

Typically, county administrators assessed the levy sometime between September and January, although there are a few cases where they laid the levy as early as July, or as

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<sup>20</sup> Robert Beverley, *The History of Virginia in Four Parts*, 2nd ed. (London, 1722), reprint (Richmond: J.W. Randolph, 1855), 204.

Upon Consideration of the Several Claims against this County ordered  
that they be allowed to the respective Claimers as followeth

	To Deborah Jourd widow for keeping Totokkey ferry	35 <sup>00</sup>
	To Daniel Clark: cart of the Kings attorney	2000
	To Char: raduee Peckwith	1080
Levy Paid -	To John Darpley Gent. Sheriff	1080
	To m <sup>r</sup> . John Spicer for finishing Poppetts Bridge	500
	To Darby Callihan for 1 Wolves head	100
	To William Russell for 2 Wolves heads	200
	To Charles Cole for 1 Wolves head	100
	To John Clark assignee of Jo: Butler for 1 Wolves head	100
	To John Clark assignee of Daniell Clark for 3 Wolves head	300
	To Roger Abbutt for 1 Wolves head	100
	To Alexander Beach for 1 Wolves head	100
	To William Thornton Gent. assignee of four persons for four Wolves heads	400
	To John ferguson assignee of Thomas Harper for 1 Wolves head	100
	To James Ince Gent. for 1 Inquest	133
	To m <sup>r</sup> . Daniell Gaches as by account	126 <sup>5</sup>
	To William Griffin for Irons for Patrick Gomerly	500
	To John Hamard under Sheriff	120
	To John ferguson under Sheriff	000
	To the Secretary	350
	By 100 <sup>00</sup> due to this County in the County Levy for Wolves heads?	12100
	lying in the hands of Tho: Barrw Gent. late Sheriff	200
	To Salary of 11900 at 10% <sup>t</sup>	1190
		13090
	By 1986 Tithables at 6 <sup>3</sup> / <sub>4</sub> of pole	13406
	To Remains in the Sheriffs being a fraction	308

The Levy for this County this year being laid on 1986 Tithables comes to 6<sup>3</sup>/<sub>4</sub> pounds of 100<sup>00</sup> of pole  
(308 pounds of 100<sup>00</sup> being a fraction to remain in the Sheriffs hands) which said sum of 6<sup>3</sup>/<sub>4</sub> of 100<sup>00</sup>  
the Sheriff of this County is hereby impowered to collect of every tithable person of this County upon  
refusal of Payment by distress, and that he pay the same to the several persons to whom it is  
ordered by this Court

Figure 2. Payments for Wolves. Richmond County, Virginia levy account, 1720.

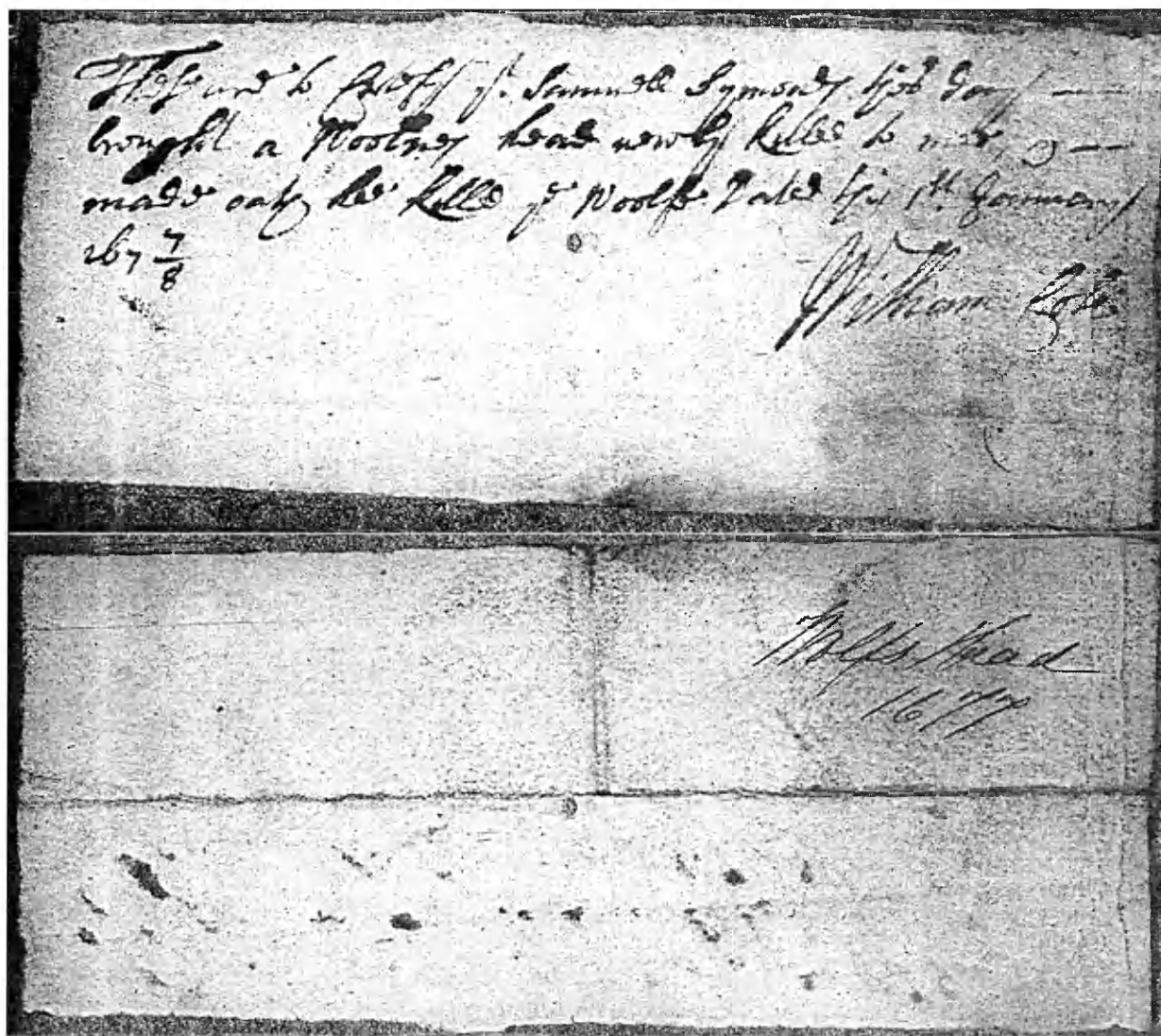


Figure 3. Certificate for a Wolf's Head from Warwick County, Virginia, 1677. The obverse reads "These are to Certify yt Samuell Symonds this day brought a wolves head newly killed to mee, and made oath hee killd ye woolef Dated this 1st January 1677/8. William Cole." The reverse reads "Wolfs Head 1677." Warwick County no longer exists; it is now part of the City of Newport News.

late as March or April after winter had passed. Sometimes county levies even skipped a year. The late tax season was not arbitrary—colonists could not pay any taxes until after the tobacco harvest, so county administrators simply kept a running tally of expenses incurred during the year, and then, at the time of the levy, they divided those expenses by the number of titheable colonists to determine how much each colonist owed.

Because the local governments laid the levy only once per year, they had to keep track of individual wolf kills as they occurred. Colonists proved their kills by carrying the head or scalp of a dead wolf to a court justice in the county where the wolf was killed. The justice then issued a certificate proving the claimant's right to a bounty reward. When the time came for the court to calculate the amount for the annual levy tax, either the colonist or the justice then presented this certificate to the court, and the amount owed was added to the county levy for that year. Figure 3 is a rare example of a surviving wolf certificate from Warwick County, Virginia (Warwick county is now part of the City of Newport News). The bounty tallies in the levy records are historians' only quantitative source for assessing historical records of wolf kills, and can help historical ecologists to plot the rate and geographic progression of wolf extirpation.

Probate inventories and zooarchaeology are also important quantitative sources. Probate inventories can be used to characterize colonial husbandry practices, and show correlations between changes in husbandry practices and the escalation of predator management strategies. Similarly, zooarchaeological analysis of faunal remains helps to describe human diet, subsistence strategies, and husbandry practices.

While bounty records, probate inventories, and faunal remains may provide a

quantifiable and material dimension to an otherwise qualitative discussion, Clifford Geertz writes that numbers "remain somehow ancillary: necessary of course, but insufficient, not quite the point. The problem—rightness, warrant, objectivity, truth—lies elsewhere, rather less accessible to the dexterities of method."<sup>21</sup> In short, there is more to the human experience than numerical analyses. Numbers tend to shade the mysteries of human motivations and over-simplify the contexts of actions. Carmel Schrire poignantly writes that, "Archaeologists may infer diet, technology, exchanges, and economy, but the flavor of their findings can never match the punch of the written word."<sup>22</sup> In the face of diverse sources, material and written, a theoretically and methodologically rounded approach is necessary. The chapters that follow are an attempt at fulfilling this expectation.

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<sup>21</sup> Clifford Geertz, *After the Fact*.

<sup>22</sup> Carmel Schrire, *Digging Through Darkness: Chronicles of an Archaeologist* (Charlottesville: University Press of Virginia, 1995), 3.

## CHAPTER II: SHEEP, WOLVES, AND COLONISTS

Managing local ecosystems by controlling the abundance and distribution of particular animal species is an ancient legacy that has persisted into present times. Especially in the last century, government agencies and private organizations have struggled to maintain an acceptable balance between the requirements of human civilization and healthy, biologically diverse ecosystems. Hunting and fishing laws, local preservation programs, endangered species designations, state and national parks, nature preserves, animal rescue programs, animal re-introduction efforts, and wildlife bounty payments are all manifestations of active human attempts to control non-human species populations, diminish competitive stresses, maintain balanced ecosystems, and reduce conflicts between humans and their non-human competitors. Like their modern descendents, the early Chesapeake colonists also initiated wildlife management plans. One of the earliest and most persistent wildlife management strategies was bounty hunting.

A bounty is a reward for killing individuals of a specified animal species for the explicit purpose of reducing that species' population, or extirpating it from settled or cultivated areas. Government administrators implement bounty laws to conform local ecosystems to the philosophical foundations, social values, economic requirements, and ecological limits of a particular human society. While modern activist groups and government agencies hotly debate the effectiveness of bounty laws, modern governments

still consider bounty hunting to be a viable method for controlling over-abundant, destructive, or intrusive wildlife populations.<sup>23</sup>

Since the seventeenth century, humans in North America have used bounties to regulate the populations and behaviors of many animals, including foxes, bears, bobcats, pumas, squirrels, crows, coyotes, groundhogs, and wolves. In the colonial Chesapeake, English colonists hoped bounty legislation would eradicate undesirable wildlife species and encourage profitable animal husbandry. These early wildlife control efforts were supposed to destroy the "vermin" that were disrupting the colonial plantation economy, or that were abhorrent to the English gentry's civilized sensibilities. To many colonists, the most egregious animal offender on both counts was the wolf.

A decade or so after the Virginia Company collapsed and the Calverts began settling Maryland, the Chesapeake landscape was dotted with dispersed plantation settlements and a few developing market centers, a pattern that would continue until the mid-eighteenth century. The rural and dispersed mixed farming economy required a greater degree of self-sufficiency at the local level. As the Europeans cleared and settled more land, colonists ate locally-produced food more than they had during the early years of colonization. The once uniformly forested Chesapeake region slowly gave way to a

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<sup>23</sup> Most states in the U.S. try not to rely on bounty hunting. Government agencies and their constituents prefer other government programs to control nuisance species. These programs are typically more palatable to the general public than bounty laws, and government agencies carefully manage them. In many states, landowners must obtain special permits to control destructive or nuisance wildlife, and live-trapping by state officials is almost ubiquitous. Bounties are not unheard of, however. In 1999, Virginia passed a law allowing localities to pay bounties for coyotes. In January 2002, the Virginia House of Delegates considered HB 980, which would have amended the 1999 law to include groundhogs (HB 980 failed in committee). In 1977, Highland County, Virginia still had a bounty law for bears on the books, and Alaska recently considered a bill for a \$200 bounty on wolves.

mosaic of large forested regions dotted with cleared and cultivated fields, homesteads, gardens, fences, and edge habitats.<sup>24</sup>

Wolves' hunting and feeding habits gradually changed as Europeans colonized the New World. The introduction of European agricultural practices and strategies for utilizing natural resources was initially beneficial to wolves. Prey populations gradually increased as new food sources became available. Where Native American predation on deer and other wildlife was significant, domestic European livestock became a beneficial supplement to a wolf pack's standard ungulate fare of elk and deer. Although wolf populations were still closely tied to wild ungulate populations, domestic livestock could reduce stress during times of scarcity or heavy competition. With the influx of this rich new food source, wolves could circumvent the competitive pressure of human deer hunting. Wolves could also weaken the effects of climate changes and cyclic fluctuations of wild prey populations—domestic stock was available all year long in almost any environmental setting.

Given these ecological changes, it is not hard to understand why the wolves and the English were in continual conflict. Colonial plantations were a boon to small mammals, bears, and deer, and attracted the expanding wolf population. The large European fields provided vegetal delights in unprecedented quantities, and hungry animals exploited their new-found bounty. Grain fields, vegetable gardens, vineyards,

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<sup>24</sup> Timothy Silver, "A Useful Arcadia: European Colonists as a Biotic Factor in Chesapeake Forests," and Grace S. Brush, "Forests Before and After the Colonial Encounter," in *Discovering the Chesapeake: The History of an Ecosystem*, edited by Philip D. Curtin (Baltimore: Johns Hopkins University Press, 2001).

and orchards all tempted animals with high quantities of nutritious foods. Burrowing animals such as woodchucks and moles enjoyed cultivated fields, and the hedgerows and forest/field transitional edge habitats were ideal for rabbits, birds, and squirrels. Deer have to eat about every four to six hours, day or night, and, like their modern descendents, they likely congregated after dark around cultivated fields and plantation gardens where food was plentiful.<sup>25</sup>

Wolves prefer to hunt nocturnally and are quite adept at locating and following their food. During the planting and harvesting seasons, wolves would have been in closer contact with human settlements as they pursued their prey into forested areas adjacent to fields and gardens. This proximity to European plantations exposed wolves to a previously unknown, yet wonderfully satisfying new food source: domesticated livestock. Contrary to popular belief, early English colonists heavily relied on imported livestock for meat, leather, and other animal products. Wild game was certainly a welcome dietary supplement, but most of the meat European colonists consumed came from domestic pork and beef imported from Europe. By 1614, Virginia had "two hundred neat cattle, as many goats," and "infinite hogges in heards all over the woods."<sup>26</sup> Within five years, colonial cattle had more than doubled. From 1620 to 1660, 77 percent of the English meat diet came from domestic sources, and from 1660 to 1690 this amount increased to

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<sup>25</sup> George Alsop, *A Character of the Province of Maryland*, 345; Andrew White, "An Account of the Colony of the Lord Baron of Baltimore, 1633," reprinted in Clayton Coleman Hall, ed., *Narratives of Early Maryland, 1633-1684* (New York: Charles Scribner and Sons, 1910), 9; Timothy Silver, *A New Face on the Countryside*, 148; Robert Beverley, *The History of Virginia in Four Parts*, 254.

<sup>26</sup> Ralph Hamor, *A True Discourse of the Present State of Virginia* (London: John Beale for William Welby, 1614), 23.

91 percent. Sheep and goats were rare additions in the seventeenth century. Between 1620 and 1700, mutton constituted less than three percent of the colonial meat diet. Sheep and goats were the most vulnerable to wolves, and wolf predation actually prevented cultivation of these animals for several decades. Their rarity and high maintenance requirements also made their meat the most expensive meat in colonial markets.<sup>27</sup>

Colonial husbandry did not require great expertise—the colonists simply allowed cattle and swine to roam freely over their forested lands and fend for themselves. This style of husbandry is ancient. Cattle grazed on the low vegetation of the forest floor and competed with wild animals for food. In autumn and early winter, pannaging pigs fed on a variety of foods, including mast (such as acorns and beechnuts), rhizomes, and tubers. Colonists did not allow livestock to range in their cleared fields because the more profitable crops of corn or tobacco filled almost every cultivated acre in Virginia.

Colonists slaughtered their cattle and hogs in the late fall and early winter to maximize meat production. Brands helped colonists to keep track of their livestock, but some, especially pigs, quickly multiplied and went feral.<sup>28</sup> The creation of a wild pig population was the colonists' intention. According to William Strachey, one of the earliest laws in Virginia prohibited the killing of cattle, hogs, or other livestock for several years so their populations could increase. In the 1660s, one observer in Maryland

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<sup>27</sup> Lorena Walsh, Ann Smart Martin, and Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," 24-33; Joanne Bowen, "Foodways in the 18th Century Chesapeake," in Theodore R. Reinhart, ed., *The Archaeology of Eighteenth Century Virginia* (Special Publication 35, Archaeological Society of Virginia, 1996), 94-103.

<sup>28</sup> Feral animals were those born in the wild from stray animals. After a few generations, the social and physical characteristics of feral animals can be noticeably different from domesticated animals.

wrote that their increase was "innumerable in the Woods," and wryly professed that the land must have been "lineally descended from the Gadarean Territories."<sup>29</sup> As early as the 1630s, hunting wild pigs was a common activity—so common that the Virginia General Assembly had to pass a law that made killing a wild pig on someone else's land illegal. On Christmas of 1662, in Accomack County, a community hog hunt took place in Nandue Neck. Folks in the community agreed that all hogs good for meat should be killed, regardless of whose land they were on or who owned them. By the time Robert Beverley wrote his famous history of Virginia in the early eighteenth century, "Hogs swarm[ed] like vermin upon the earth, and [were] often accounted such, insomuch, that when an inventory of any considerable man's estate is taken by the executors, the hogs are left out, and not listed in the appraisement." Beverley continued, saying

The hogs run where they list, and find their own support in the woods, without any care of the owner; and in many plantations it is well if the proprietor can find and catch the pigs, or any part of a farrow, when they are young to mark them; for if there be any marked in a gang of hogs, they determine the propriety of the rest, because they seldom miss their gangs; but as they are bred in company, so they continue to the end, except sometimes the boars ramble.<sup>30</sup>

Feral cattle also appeared quickly in local forests. In 1633, Father Andrew White noted that, in Maryland, "The nearest woods are full of horses and wild bulls and cows."<sup>31</sup>

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<sup>29</sup> William Strachey, *For the Colony in Virginea Britannia. Lawes Divine, Morall and Martiall, &c.* (London: William Burre, 1612); in Peter Force, ed., *Tracts and Other Papers*. George Alsop, *A Character of the Province of Maryland*, 347. This is a biblical reference to the book of Luke, Chapter 8. When traveling in the land of Gadarenes, Jesus exorcised some demons and sent them into a herd of swine. The swine then went mad, jumped off a cliff, and drowned in a lake. In this usage, the author meant to conjure an image of numerous wild swine running amuck in the forests.

<sup>30</sup> JoAnn Riley McKey, *Accomack County, Virginia Court Order Abstracts* (Bowie, MD: Heritage Books, Inc.), 1: xii; Robert Beverley, *The History of Virginia in Four Parts*, 262-263.

<sup>31</sup> Andrew White, "An Account of the Colony of Lord Baltimore, 1633," 9.

This feral cattle was apparently a more difficult quarry than wild swine. In the 1680s, Reverend John Clayton wrote that "Wild Bulls and Cows there are now in the inhabited parts, but such only as have been bred from some that have strayed, and become Wild, and have propagated their kind, and are difficult to be shot, having a great Acuteness of Smelling." Wild horses also frequented Virginia's wilderness, and were so numerous by the early eighteenth century that colonists hunted them for sport.<sup>32</sup>

With deer and other wild animals feeding around plantations and droves of wild hogs, cows, and horses roaming in the nearby forests, wolves had a smorgasbord of meat at their disposal all year long. Most colonial writers note that wolves would run away from humans, but the docile livestock were ill-equipped to resist a hungry wolf pack's hunting expertise. Additionally, butchered deer carcasses and other food garbage attracted wolves to human settlements.<sup>33</sup>

Freed from the constraints of diminishing food resources and stiff human competition, the Chesapeake wolf population exploded in the mid-seventeenth century. In modern conditions, when food is abundant and other factors of mortality are limited, wolf populations can double in two to three years. As the wolf populations increased, pack territories shrank and intraspecific competition pushed wolves eastward into the English-

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<sup>32</sup> John Clayton, "An account of Mr. John Clayton's voyage to and observations on Virginia," in *Miscellanea Curiosa*, ed. Edmund Halley, 3:337-338; Robert Beverley, *The History and Present State of Virginia*, ed. Louis B. Wright (Chapel Hill: UNC Press, 1947), 310.

<sup>33</sup> William Byrd, *The Westover Manuscripts: Containing the History of the Dividing Line Betwixt Virginia and North Carolina; A Journey to the Land of Eden, A.D. 1733; and a Progress to the Mines. Written from 1728 to 1736, and Now First Published* (Petersburg: Printed by Edmund and Julian C. Ruffin, 1841), electronic edition, transcribed by Apex Data Services, Inc. (Chapel Hill: Academic Affairs Library, UNC, 2001), 116.

dominated Tidewater regions, where wolves were less abundant and food more plentiful. As English settlement progressed into the 1700s, wolf populations steadily increased, while deer populations started a decline because of increased human hunting (due to the improving deerskin trade), substantial wolf predation, and competition with free-ranging livestock.<sup>34</sup>

Feral hogs and free-ranging cattle would have devoured much of the available wild forage in a wooded area. Pigs are especially destructive because they are comfortable in a wide range of habitats, and will eat virtually anything. Wild pigs currently proliferate in the Appalachian Mountains, but in colonial times they would have been equally at home in tidal marshes. Pigs congregate in areas with plenty of cover, and avoid open ranges. They frequent mast-producing hardwood forests because of the availability of food. Wild pigs also tend to avoid extreme cold; in winter, they stay below the snowline and out of prolonged freezing temperatures. The Chesapeake Tidewater in the seventeenth and eighteenth centuries would have been ideal for them.

The diet of wild pigs is extremely varied. Pigs will eat mast, tubers, rhizomes, invertebrates, birds, carrion, herbaceous plants, and grains. However, pigs do prefer some foods over others, and what they select depends on their habitat and the weather. Being "recalcitrant nomads," pigs are sedentary until a food shortage forces them to move. The largest portion of a wild pig's diet is acorns and other mast. Pigs will gather in oak forests when acorns fall, and do not travel as much during these periods. A medium-sized

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<sup>34</sup> Glenn D. DeGiudice, *The Ecological Relationship of Grey Wolves and White-tailed Deer in Minnesota*. Minnesota: Department of Natural Resources, 1998.

sounder of wild swine will absolutely devour the available mast in a forested area, a behavior that colonists had evidently observed. In one seventeenth century account, a western explorer observed deer and bear frenetically feeding in the woods, "crashing Mast like Swine."<sup>35</sup> In winters of poor mast years, pigs travel more and vary their diet. On extremely rare occasions, a more aggressive pig may prey upon lambs or calves in the late Spring if other food is scarce. During hot weather, pigs like to wallow and will feed on underground vegetation when the ground is moist.

The detrimental effect pigs can have on the available food supply in a wooded region is compounded by their staggering reproductive rate. Pigs can breed as early as six months of age, and sows produce two litters per year. A litter is usually five or six piglets, but can be as high as a dozen. Given adequate nutrition, a pig population can double in four months.<sup>36</sup>

The sudden injection of pigs and livestock into the ecosystem placed significant stress on native deer populations. A modern analogy can be found in regions where an over-population of deer has broken down forest diversity. Researchers have shown that over-browsing of the low-lying vegetation reduces the populations of everything from slugs, to birds, to mice, to flowers. Free-ranging cattle and pigs of the seventeenth century

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<sup>35</sup> John Lederer, *The Discoveries of John Lederer*, 8. According to the Oxford English Dictionary, "crashing" in this context means "to crush with the teeth."

<sup>36</sup> Reginald H. Barrett and Grant H. Birmingham, "Wild Pigs," in *The Prevention and Control Of Wildlife Damage Handbook* (Lincoln: University of Nebraska, 1994); Jennifer Hruby, "Sus Scrofa," in University of Michigan Museum of Zoology, "The Animal Diversity Web," 2002, database-online, available from <<http://animaldiversity.ummz.umich.edu/>> [2002]; Lorena Walsh, Ann Smart Martin, and Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," 30-32; Joanne Bowen, "Foodways in the 18th Century Chesapeake," 103.

would have certainly caused similar problems, especially if they were competing with the deer for mast and herbaceous plants.<sup>37</sup>

The reduced amount of wild forage forced deer and other medium-sized mammals to seek food elsewhere, either in English fields and orchards, or in the less settled areas between plantations. This placed bear and deer squarely in the hunting ranges of both Indians and wolves. Either way, the locus of most of the wolves' staple food was in the environs of English plantations and settlements. Conflict between wolves and humans was inevitable.

To English colonists, there was really no good reason for predators to be skulking around their homes and settlements. By the time the English founded Jamestown, wolves had been eradicated in England for decades, so most seventeenth century colonists had not personally contended with this wild canine prior to their arrival in the New World. In 1577, William Harrison attested to this in his *Description of Elizabethan England*:

It is none of the least blessings wherewith God hath endued this island that it is void of noisome beasts, as lions bears, tigers, pardses, wolves, and such like, by means whereof our countrymen may travel in safety, and our herds and flocks remain for the most part abroad in the field without any herdman or keeper.<sup>38</sup>

The New World presented a stark contrast to this docile English landscape. Once wolves in the Virginia colony began to increase, they thinned the already dwindling deer

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<sup>37</sup> Larry Anthony Wise, "'A Sufficient Competence to Make Them Independent': Attitudes Towards Authority, Improvement and Independence in the Carolina-Virginia Backcountry, 1760-1800" (Ph.D. diss., University of Tennessee, 1999), 33; Timothy Silver, *A New Face on the Countryside*, 179. For a short, accessible article on how over-browsing can affect a forest ecosystem, see Erik Ness, "Oh, Deer" *Discover Magazine* 24 (March 2003): 67-71.

<sup>38</sup> William Harrison, *A Description of Elizabethan England*, The Harvard Classics Series, ed. Charles W. Eliot, vol. 35, part 3 (New York: P.F. Collier & Son, 1909-14).. Internet on-line, available from <[www.Bartleby.com](http://www.Bartleby.com)>, 2001 [October 2003].

population, preyed upon fur-bearing animals, snatched the colonists' livestock, and howled ominous chords under the mantle of darkness. For a people struggling to bring English civilization to an "uncivilized" world, wolves added an uncomfortable sense of wildness and insecurity to Virginia's colonial enterprise.<sup>39</sup>

All human societies (including our own) make great efforts to create an ecosystem that best suits their sensibilities. What constitutes a "properly" controlled ecosystem is entirely relative, however, and is based on the normative values, socio-economic systems, political institutions, local environment, and ecological sophistication of a human population at a given time in a given place. These variables, relative to specific social and historical contexts, moderate decisions regarding wildlife management practices. As one might expect, what the early English colonists considered to be a proper natural environment strays a bit from our own contemporary ideas. Even so, modern wildlife management techniques have antecedents in the seventeenth and eighteenth centuries. Although colonial management efforts lacked the scientific research, conservation ideology, and moralizing rhetoric of modern times, they nonetheless were the precursors to modern management schemes.

Medieval English traditions<sup>40</sup> and the peculiar circumstances of colonial animal

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<sup>39</sup> John Lawson, *A New Voyage to Carolina*, 22; Mark Catesby, *The Natural History of Carolina, Florida, and the Bahama Islands*, 3:xxvi.

<sup>40</sup> According to some of the earliest extant English records, the medieval Welsh paid the Saxons 300 wolf skins per year. In 1281, King Edward I organized the destruction of wolves, and similar policies persisted throughout the Middle Ages. By the fifteenth century, habitat loss, hunting, and wild food shortages eliminated wolves from England. They continued to be a problem in Scotland and Ireland until the eighteenth century. John Cummins, *The Hound and the Hawk: The Art of Medieval Hunting* (New York: St. Martin's Press, 1988), 137; Bruce Hampton, *The Great American Wolf* (New York: Henry Holt and Company, 1997), 28, 64.

husbandry combined to produce the earliest predator management schemes in North America. For a typical English land owner or indentured servant who was trying to survive in a hostile foreign land, the wolf was at best extremely annoying, and at worst a cause of significant hardship and economic loss. To the colonial intellectual and social elite, the wolf represented a New World savagery that simply had to be abolished.

The English perception of wolves in America was colored by the tales and folklore of their ancestors. Wolves had a savage reputation in medieval Europe. Many medieval observers recorded that wolves would prowl battle fields and feast on human carrion in the aftermath of war.

Although appalled by the prospect of being dug up and eaten after death, the English colonists were generally not afraid of wolves chewing on them while they were still breathing.<sup>41</sup> The most salient reason for controlling wolves and other predators was not fear or a deep-seated historical hatred—it was economics. Livestock were expensive, and were an indicator of colonial wealth. The most powerful seventeenth century patriarchs always owned cattle, and they earned additional income by using their surplus meat reserves to victual servants, smaller land owners, and maritime crews.<sup>42</sup> Even if they had not personally experienced wolf depredations, colonists were still keenly aware of

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<sup>41</sup> George Alsop, *A Character of the Province of Maryland*, in Clayton Coleman Hall, ed., *Narratives of Early Maryland, 1633-1684*, 346; John Lederer, *The Discoveries of John Lederer*, 8; John Clayton, "An account of Mr. John Clayton's voyage to and observations on Virginia," in *Miscellanea Curiosa*, ed. Edmund Halley, 3:342; John Lawson, *A New Voyage to Carolina*, 53; Mark Catesby, *The Natural History of Carolina, Florida, and the Bahama Island*, 2:xxvi.

<sup>42</sup> David Pietersz De Vries, "Short Historical and Journal Notes of Several Voyages. . .," *Collections of the New York Historical Society*, 2nd Series (New York: D. Appleton and Company, 1857), 3:34-36. John Farrer, *A Perfect Description of Virginia [1649]* (Charlottesville: Virginia Center for Digital History, 2003).

the canine's presence and its predatory nature.

Given the inconsistent and often hostile relations the English had with many Chesapeake Indian tribes (who often exchanged venison for English goods), and the problems the colonists had with provisioning themselves with meat, dairy products, wool, and other domestic products, only the largest plantations could sustain frequent wolf depredations. To mitigate the growing wolf problem, the English colonial administrators instituted bounty laws.

Virginia was not the only Chesapeake colony to address the growing wolf problem. The younger Maryland settlements were also experiencing significant wolf depredations. In 1644, two years before Virginia passed its new bounty law, a wealthy Maryland colonist named John Lewger<sup>43</sup> discovered that wolves could be a serious threat to animal husbandry. An account of Lewger's holdings indicates that he possessed over 100 head of cattle, and shows that he also dabbled in raising sheep. Lewger claimed to own four rams (three old and one young) and five ewes, all of which produced two lambs for him that season. According to the historical documents, of these eleven sheep, wolves killed both lambs, one ewe, and one ram (probably the young one).<sup>44</sup> Not only is this a loss of nearly forty percent, but Lewger was unable to increase the size of his flock that year because predators had eaten all his lambs. Clearly, as long as wolves were around,

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<sup>43</sup> Lewger was the first Secretary of the Maryland colony. He was a man of influence, but returned to England in the late 1640s. Eventually, the Calvert family owned his plantation.

<sup>44</sup> Giles Brent, John Lewger, and Wm. Braithwait, "Acct. of his Lordships Cattle and Corn, 3 May 1644" in William Hand Browne, ed., *Archives of Maryland* (Baltimore and Annapolis: Maryland Historical Society, 1887) 4:227, database on-line, available from *Archives of Maryland Online*, 2002 <<http://www.archivesofmaryland.net>> [2002].

sheep husbandry was a costly enterprise. In October 1654, Maryland instituted its own wolf bounty.

Even dream-weaving travelogues promoting Maryland's settlement admitted difficulties with the growing wolf problem. George Alsop wrote the following in 1666:

Maryland (I must confess) cannot boast of her plenty of sheep here, as other Countries: not but that they will thrive and increase here, as well as in any place of the world besides, but few desire them, because they commonly draw the Wolves among the Plantations, as well by the sweetness of their flesh, as by the humility of their nature, in not making a defensive resistance against the rough dealing of a ravenous Enemy. They who for curiosity will keep Sheep, may expect that after the wolves have breathed [exercised]<sup>45</sup> themselves all day in the Woods to sharpen their stomachs, they will come without fail and sup with them at night, though many times they surfeit themselves with the sawce that's dish'd out of the muzzle of a Gun, and so in the midst of their banquet (poor Animals) they often sleep with their Ancestors.<sup>46</sup>

Alsop's assessment of the inherent difficulty of raising sheep was shared throughout the Chesapeake. Shepherding was a late introduction to the colonial plantation economy. The proliferation of wolves made raising sheep too costly and labor intensive to warrant its inclusion in the colonial economic system. On 20 June 1676, Thomas Glover wrote that the "ravenous beasts" had an adverse effect on Virginia's prospects for profitable shepherding. "As to their Sheep," he wrote, "they keep but few, being discouraged by the Wolves, which are all over the Country, and do much mischief amongst their flocks." Given the extreme emphasis on tobacco production, there simply was not enough incentive to risk sacrificing cleared tobacco-producing acreage to the

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<sup>45</sup> *Oxford English Dictionary*, 2nd ed., CD-ROM version 2.0 (Oxford: Oxford University Press, 1999).

<sup>46</sup> George Alsop, *A Character of the Province of Maryland*, in Clayton Coleman Hall, ed., *Narratives of Early Maryland, 1633-1684*, 346-347.

risky business of sheep husbandry. Cattle and pigs required much less maintenance, and remained the primary source of domestic animal products for over a century. Beef, pork, poultry, and wild game made mutton less of a necessity, and merchants could import wool from England more cheaply than a plantation owner could manufacture it locally. For over a century, shepherding was a limited and depressed activity in the Chesapeake colonies. The presence of wolves was a decisive factor in this peculiarity, both because of the unacceptable reality of actual depredations, and because of the perceived lupine savagery that dominated the traditions of English countrymen.<sup>47</sup>

The historical and zooarchaeological research of Lorena Walsh, Ann Martin, and Joanne Bowen supports the assertion that sheep husbandry in the Chesapeake colonies was scarce and problematic. Combining faunal analysis with historical research to show that the colonial English diet reflected colonial agricultural practices, Walsh, Martin, and Bowen indicate that sheep played a minimal role in both the colonial diet and the Chesapeake plantation economy. Colonists living in rural Chesapeake regions (both in Maryland and in Virginia) between 1620 and 1700 actually ate fewer sheep than they did wild game (both were only a small percentage of the total meat diet).

Likewise, probate inventories from York County Virginia show that sheep constituted less than nine percent of all livestock between 1620 and 1700. Anne Arundel County, Maryland maintained a similar pattern. Between 1660 and 1700, sheep composed only 13 percent of the total Maryland livestock, while cattle made up 48

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<sup>47</sup> Thomas Glover, *An Account of Virginia, its scituation, Temperature, Productions, Inhabitants, in the Philosophical Transactions of the Royal Society*, 20 June 1676 (Oxford: Horace Art, 1904), 19.

percent. Walsh, Martin, and Bowen show that not until well after 1700 did sheep approach 20 percent of the livestock in the probate inventories. Similarly, David Percy notes that, between 1719 and 1721, only eight of 20 probate inventories in Charles County and Prince George's County, Maryland listed sheep.<sup>48</sup>

An historical archaeologist, Henry Miller, agrees with these researchers. Miller surveyed 42 Maryland estate inventories from 1638 to 1665, and found that only three contained any sheep. His archaeological analysis is similarly consistent. Of six pre-1660 archaeological sites, half had no sheep bones in their faunal assemblages, and the other half had less than one percent.<sup>49</sup>

One can attribute the consistent lack of mutton in the seventeenth century colonial diet to the fact that mutton was the most expensive meat to produce in the colonies. The predominance of predators and the lack of suitable open-range pasture prevented profitable shepherding for almost the entire seventeenth century, especially in the hinterlands. That which is expensive to produce, is also expensive to purchase, so only the wealthiest colonists enjoyed the rare treat of roasted mutton at their dining tables.

By the eighteenth century, sheep populations began to slowly increase in the Chesapeake. According to Miller's analysis, the percentage of Maryland households owning sheep increased steadily to 40 percent by 1700. Additional historical records

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<sup>48</sup> Lorena Walsh, Ann Smart Martin, and Joanne Bowen. "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study;" David O. Percy, "Of Fast Horses, Black Cattle, Woods Hogs, and Rat-tailed Sheep: Animal Husbandry Along the Colonial Potomac." The National Colonial Farm Research Report #4 (Accokeek, MD: David Percy, 1979), 1.

<sup>49</sup> Henry M. Miller, *Killed by Wolves: Analysis of Two 17<sup>th</sup> Century Sheep Burials at the St. John's Site and a Comment on Sheep Husbandry in the Colonial Chesapeake*. St. Mary's City Research Series, No. 1 (St. Mary's City, MD, 1986).

support Miller's findings. In 1669, Nathaniel Shrigley wrote that the colony contained "plenty of Cows, Bulls, Oxen, Sheep, Goats, Swine, Horses, and all manner of English poultry."<sup>50</sup> A French Huguenot observed in 1687 that domestic animals were increasing, noting that Virginia raised "great numbers of horses, oxen, cows, sheep, pigs, turkeys, geese, ducks, chickens." Even then, mutton still remained only a small part of the colonial diet. In 1688, John Clayton wrote that mutton was still a rarity in the colonies, and Englishmen highly regarded it as a special dietary treat:

[Virginia's] Sheep are of a midling size, pretty fine fleeced in general, and most Persons of Estate begin to keep Flocks, which hitherto has not been much regarded, because of the Wolves that destroy them; so that a piece of Mutton is a finer Treat, than either Venison, Wild-Goose, Duck, Widgeon, or Teal.<sup>51</sup>

This "finer Treat" was a statement of status at the tables of the elite. By the close of the seventeenth century, successful shepherds sent most of their mutton to the eastern towns and markets where the wealthiest colonists purchased it at great expense. In fact, until the nineteenth century, mutton was the most expensive meat on the market. This is likely why, in the eighteenth century, the diet of the Calvert family, arguably the most ostentatious family in Maryland, consisted of 14.1 percent mutton, and why mutton constituted 20 percent of the meat consumed in Williamsburg's Shields Tavern (on average, most of the urban elite did not consume much more than 5 percent mutton).<sup>52</sup>

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<sup>50</sup> Nathaniel Shrigley, *A True Relation of Virginia and Mary-land* (London: Thomas Milbourn for Thomas Hudson, 1669), 4.

<sup>51</sup> Durand of Dauphine, *Voyages d'un Francois Exile' Pour la Religion avec une Description de la Virgine and Marilan dans L'Americque*, 122; John Clayton, "An account of Mr. John Clayton's voyage to and observations on Virginia," in *Miscellanea Curiosa*, ed. Edmund Halley, 3:338.

<sup>52</sup> Lorena Walsh, Ann Smart Martin, Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," 75, 79, 143, 175-176, 184.

### CHAPTER III: BOUNTY HUNTING

The English colonial administrators believed that if the colonial enterprise was ever going to be successful, they had to “civilize” the landscape. To the English, this meant re-creating the Chesapeake in England’s image. As Native populations dwindled and their traditional culture lost its dominance, Chesapeake forests opened to colonization. The English would not have a completely tamed wilderness, however, as long as wolves wandered freely. The expansion of settlement and the eventual proliferation of sheep husbandry were continually interlocked with bounty hunting. Using bounty records, colonial statutes, probate inventories, and zooarchaeological studies, this chapter will discuss the role wolves unknowingly played in the development of English hegemony, and will analyze how both humans and wolves responded to a changed colonial environment.

Before approaching these issues, I will first offer a short discussion of how I compiled the bounty data. As mentioned earlier, bounty records are an internal component of the county levy accounts, usually found in the county court order books of Virginia, Maryland, and Delaware. The first step was to identify which counties maintain extant records from the seventeenth and eighteenth centuries, and then search for the annual levy lists for each county, for each year. Some counties have large gaps in the available records, and other counties have complete records but only sporadic levy lists.

After assembling the available levy lists for each relevant county, I entered all the bounty data they contained into a spreadsheet,<sup>53</sup> by county and date. The spreadsheet includes the name of the bounty claimant, the claimant's ethnicity or social position, (e.g., servant, "negro," Indian, etc.), if included, the animal species killed, the number of animals each person killed, the animal's age (if indicated), the method the claimant used to kill the animal (if indicated), and the date of the levy.

The amount of available bounty data was almost overwhelming, so I proceeded systematically. Wildlife does not obey the arbitrary administrative boundaries that human institutions impose. They are more likely to obey topographical constraints, such as rivers and peninsulas. Plus, county boundaries evolved over time. As English populations increased in specific areas, counties expanded, merged, divided, subdivided, and sometimes disappeared altogether. Adding further complexity is the fact that some counties do not have sufficient extant levy records to be statistically significant. Thus, tracking bounty data over the course of 150 years is impossible without some form of analytical consolidation. To discover trends across time as well as space, I had to create divisions based on physiography, as well as the artificial and mutable administrative bounds. Table 1 shows the regional divisions, the counties they encompass, the date the counties were formed, and the extant levy records.

Although deriving a baseline wolf population from bounty claims is a tempting project, doing so would be a dubious use of the available data. Bounty records are only a broad and indirect indicator of historical wolf populations. Records of bounties give us

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<sup>53</sup> Using Microsoft<sup>®</sup> Excel<sup>®</sup> software.

TABLE 1  
REGIONAL DIVISIONS AND EXTANT COUNTY LEVY RECORDS

REGION	DATE	COUNTY	EXTANT ITEMIZED LEVY RECORDS
Lower James	1634-1642/43	<i>Warwick River</i>	None
	1642/43-1952	Warwick	1677-1678, 1690, 1701
	1634-1637	<i>Warrosquyoake</i>	None
	1637	Isle of Wight	1692-1694
	1634-1952	<i>Elizabeth City</i>	1692-1693, 1696, 1698-1699, 1720-1741
	1636-1637	New Norfolk	None
Upper James	1637-1691	Lower Norfolk	1645-1684, 1686-1690
	1691	Norfolk	1691-1694, 1720-1722, 1724-1731
	1691	Princess Anne	1691-1741
	1637-1646	Upper Norfolk	None
	1646-1974	Nansemond	None
York River	1634	<i>Charles City</i>	1655-1665; 1676-1678; 1688-1695; 1737-1741
	1702	Prince George	1715-1720; 1737-1739
	1634	<i>James City</i>	None
	1652	Surry	1672-1717
York River	1624-1642	<i>Charles River</i>	None
	1642	York	1647, 1657-1652, 1657-1662, 1665-1741
	1651	Gloucester	None
	1654	New Kent	None
	1691	King and Queen	None
	1701	King William	None
Northern Neck	1645	<i>Northumberland</i>	1653, 1655-1741
	1651	Lancaster	1657-1683, 1686-1741
	1669	Middlesex	1674-1675, 1678, 1681-1725, 1733-1736, 1740
	1636-1692	(Old) Rappahannock	None
	1692	Essex	1692-1701, 1703-1710, 1712-1714, 1717-1739
	1692	Richmond	1700-1741
	1653	Westmoreland	1663-1664, 1708, 1720
Northern Piedmont	1720	King George (from New Kent)	1721-1741
	1664	Stafford (From Westmoreland)	1687-1692
	1731	Prince William	None
	1728	Caroline (from Essex, King and Queen, and King William)	1732-1741
	1720	Spotsylvania (from Essex, King and Queen, and King William)	1724-1741
Central Piedmont	1734	Orange	1735-1741
	1634	<i>Henrico</i>	None
	1728	Goochland	1728-1741
	1721	Hanover (from King William)	None
Southern Piedmont	1734	Amelia (from Brunswick and Prince George)	1735-1741
	1732	Brunswick (from Prince George)	1732-1741
VA Eastern Shore	1632-1642	<i>Accowmack</i>	None
	1642/43	Northampton	None
	1662	Accomack	None

Note: Indented county names indicate that the county formed from the county listed above it. Italicized counties are the original counties, from which all other counties formed.

exactly that—a tally of *rewarded* kills, not a precise calculation of general wolf mortality. At best, records of bounty claims provide *minimum* kill numbers. The number of wolves humans actually killed was higher, because many kills went unrewarded, and, therefore, unrecorded.

Wolf kills could be unrewarded for a variety of reasons. If the killed animal was too old or decomposed, if the hunter attempted to claim a bounty in a county different from the one where the wolf was killed, or if a hunter was deceitfully claiming a duplicate bounty, administrators may have refused payment. Hunters may also have voluntarily chosen not to collect a bounty. Perhaps traveling to the nearest magistrate was not cost-effective, or the hunter killed the wolf illegally on another man's land. Perhaps the hunter was not aware of the bounty law at all, or he was a servant hunting without the permission or knowledge of his master. Maybe the colonist acquired a wolf's head through other questionable means, or intended to use it only for trading purposes. The reverse could also be true: perhaps a colonist received a bounty without actually killing a wolf.

Because of this myriad of contingencies, using bounty records to estimate total wolf populations or to plot quantitatively wolves' relative geographic density simply cannot be done with reliability or precision. Bounty tallies may add a sense of realism and quantifiability to historical analyses, but the exact numbers are only the springboard for more interpretive and qualitative conclusions. A much more salient approach is to discuss the social and historical contexts in which bounty hunting occurred, and to analyze how human population growth and colonial settlement influenced the number of

bounties colonists claimed in a specific region.

The bounty records do not indicate that all colonists were entering the woods in droves and slaughtering any wild canid they came across. Extant records show that, until the eighteenth century, only a handful of people in any given county were actively collecting bounties. In all the counties for which records are available, no more than 150 individual colonists killed wolves in a single year, and the annual average was far less (Figure 4).<sup>54</sup>

Although the total number of individual bounty claimants is much lower than one might expect, every social and ethnic group in the colonial social structure claimed a bounty at one point or another. Elite plantation owners, common farmers, indentured servants, tributary Indians, African and Indian slaves, and English women all make appearances in the records. However, most bounty payments went to those who enjoyed the privileges of colonial society's upper echelons. Most of the names in the bounty records are easily identifiable as prominent land owners, county court justices, burgesses, councilmen in the General Assembly, county sheriffs, prominent traders, or militia captains. The wealthy colonists had the most problems with wolves. They claimed more land, owned more livestock, raised the most sheep, and were often interested in developing the local economy through diversification in products and manufactures (such as wool). They also enjoyed eating mutton and wild game. Beef and pork were easily accessible to them on their plantations, so mutton and wild game became an aristocratic

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<sup>54</sup> Often, a single person claimed bounties for many wolves killed by several different people. When discernable in the records, the data show the number of individuals who actually killed wolves, rather than the number of colonists who received the payment.

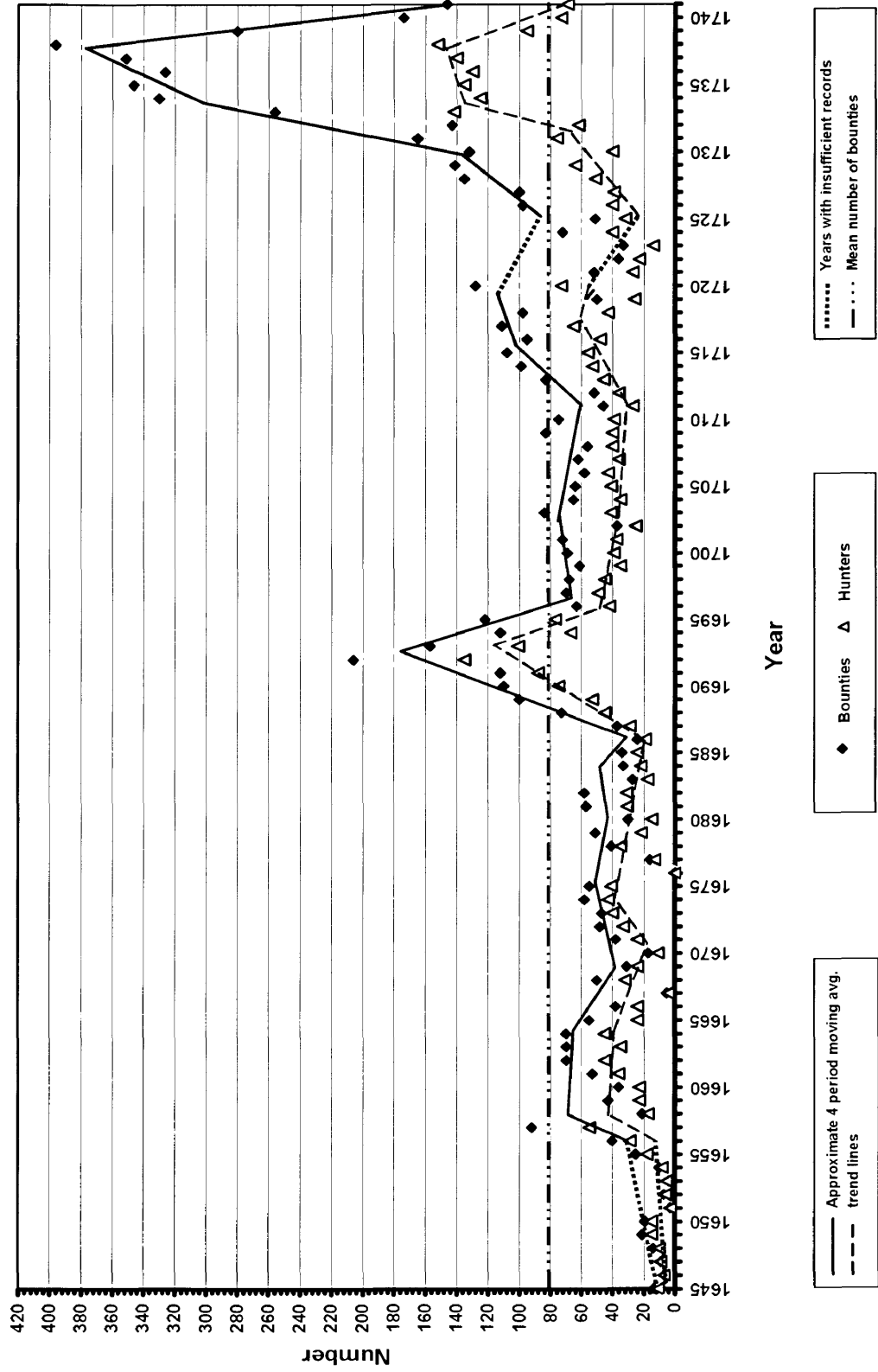


Figure 4. Total Number of Wolf Bounty Payments in Virginia, 1645-1741.

dietary supplement, a demonstration to visitors that they could afford to buy or produce mutton and veal (the most expensive meats), and that they enjoyed enough leisure to indulge in the pleasures of the chase.<sup>55</sup> Wolves were an obstruction to these desires, preying on all manner of wild game, as well as the elite's calves, piglets, sheep, and goats.

Regardless of who they were, where they were hunting, how many wolves they were killing, or when they were killing them, the underlying reason that the people of the Chesapeake Bay slayed wolves had little to do with an intangible or deep-seeded hatred or fear of wolves. Elite planters, common colonists, slaves, traders, trappers, and Indians killed wolves to preserve the livestock and wild game on their land, to trade, to satisfy their sporting ambitions, and to bring England to Virginia.<sup>56</sup>

No matter what their motivations, all Chesapeake wolf hunters used similar methods to hunt and kill their quarry. The county clerks across Virginia indicated up to six different ways that colonists killed wolves or acquired their heads: gun, pits, traps, dogs, trade with the Indians, and, in the case of Surry County, killing them in their dens. Occasionally, other methods make appearances. Not all counties recorded all these

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<sup>55</sup> From 1721 to 1827, wild mammals and birds composed barely one percent of the urban elite diet. Joanne Bowen, Personal Communication, 15 May 2003; Lorena Walsh, Ann Smart Martin, and Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," Final Performance Report. National Endowment for the Humanities Grant RO-22643-93 (Williamsburg: Colonial Williamsburg Foundation, 1997), 142; Joanne Bowen, "Foodways in the Eighteenth Century Chesapeake," in Theodore R. Reinhart, ed., *The Archaeology of Eighteenth Century Virginia*, 100-105.

<sup>56</sup> Most, if not all, had extensive cattle holdings. One of dozens of examples is Henry Woodhouse. Woodhouse owned 40 sheep and 110 cows, steers, calves, and bulls. Not surprisingly, he was responsible for killing 37 wolves from 1660 to 1701. He used every means at his disposal—guns, dogs, and pits—and at least one third of the wolves he killed were pups. William Barber, Anthony Sebrell, Adam Thoroughgood, and Thomas Willoughby are additional examples. All these planters owned sheep, and all claimed bounties during the seventeenth century (Philip A. Bruce, *Economic History of Virginia in the Seventeenth Century*, 375-378).

methods. Whether they used guns, traps, pits, or dogs, wolf hunters killed wolves indiscriminately. They killed all ages and all sexes.

As one might expect, the data in the extant levy records show that the number of wolves killed for bounties fluctuated throughout the seventeenth and early eighteenth centuries (Figure 5). The number of bounties claimed in the Chesapeake region varied temporally and geographically. Understanding why the number of bounties increased or decreased in a county or region as time progressed is indispensable to understanding the reciprocal relationship between predator management, colonial settlement, and ecological change.

A cursory glance at Figure 4 indicates that there are several periods when the number of bounty payments spiked, and then quickly stabilized at previous levels. The first noticeable increase occurred in the 1650s, and bounties returned to earlier levels by 1670. A sharper and more dramatic increase occurred around 1690, followed by a marked decrease by 1696. The final increase slowly began around 1714, and continued to rise until 1740, at which time the number of bounties once again began to fall.

Human demographic changes and wild food availability are probably the most significant causes of these fluctuations. The extension of English settlement into new areas brought western wolf populations into closer contact with English colonists and their livestock. The number of wolf bounties is linked to the prevalence of wolf depredations, and the number of wolf depredations is tied together with the availability of wild food (typically, wolves attack domestic stock the most when other food sources are limited). The expansion of English settlement, changes in livestock husbandry practices,

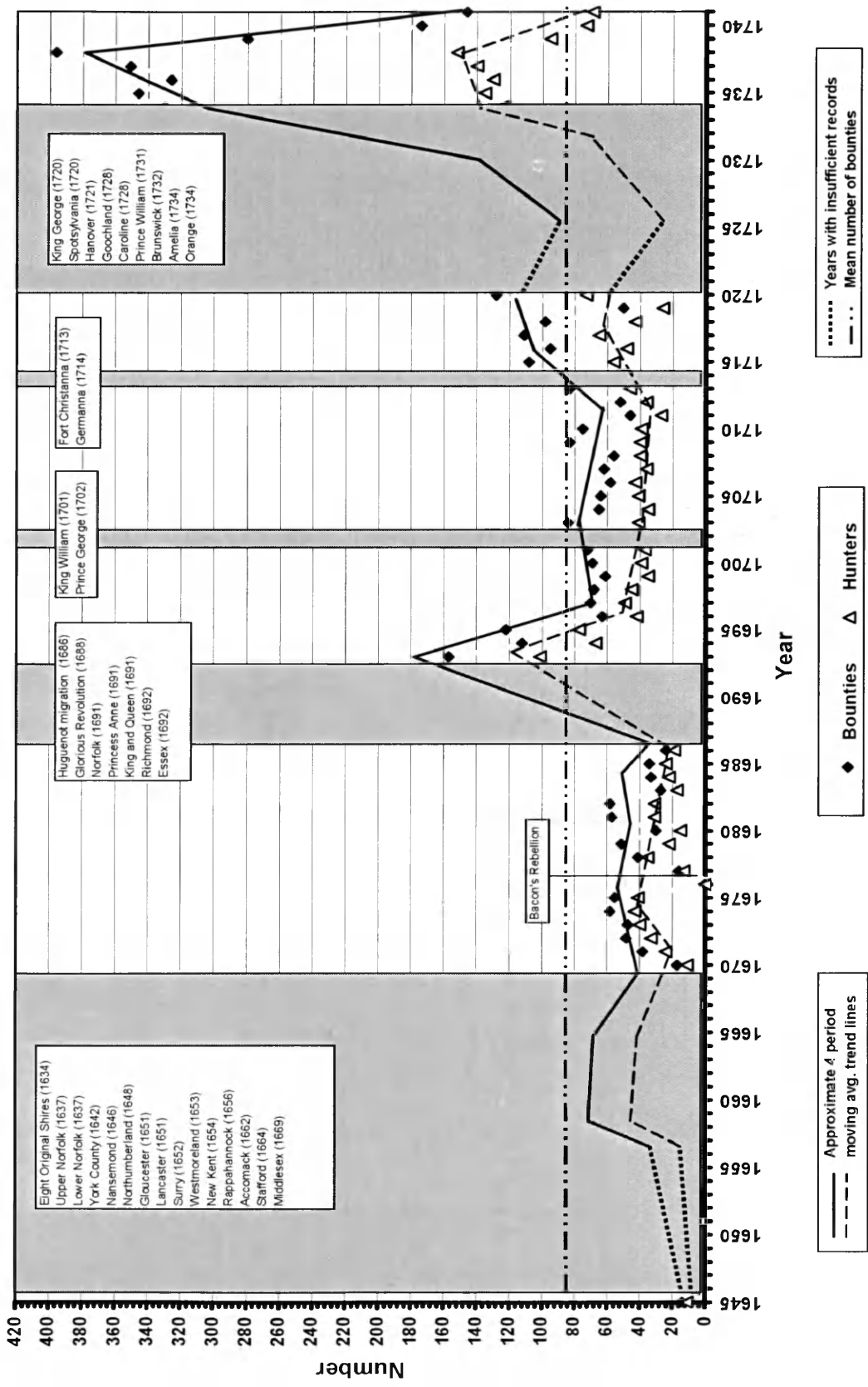


Figure 5. English Settlement and Wolf Hunting, 1645-1741.

changes in human hunting behavior, habitat transformation, and climatic shifts all could affect the availability of wolves' available food sources.

Wolves are peripatetic and follow their food, and food availability is the leading factor in determining wolf population density and distribution. The conflict between humans and wolves was the most intense in areas where human hunting, competition with livestock, or climatic change decreased prey populations. Local areas that raised lots of sheep may have also seen an increase in bounties, because wolves typically will select a sheep or lamb over any other prey. Habitat changes, such as deforestation, plantation agriculture, and climatic fluctuations also would have affected wolves' food sources, especially in geographically confined areas such as peninsulas. During seasons with mild winters, colonists likely experienced increased wolf depredations, because wolves would have had more difficulty killing wild ungulates. Prolonged or severe droughts would have had similar results. Increased depredations led to more bounties.

European migrations to the Chesapeake region and the colony's administrative responses to the resulting population increases did not proceed in a steady, unwavering tide. They proceeded in bursts. As the colonial population increased, government officials created new counties or divided old ones to accommodate the settlers' needs. The colonial government tended to form new counties only when the degree of settlement warranted such an action, or if government officials were directly involved in an upcoming land grant or settlement scheme. So, understanding when and why new counties formed is an important part of understanding the progress of colonial settlement, and a region's wolf hunting practices.

Once a new county government was entrenched, new land surveys and grants led to growing numbers of English homesteads. The resulting settlement augmented the once sparse populations, which had definite ecological effects. Figure 5 shows that the periods of increased wolf bounties coincide almost exactly with periods of county formation and increased settlement. This is especially true when new counties pushed the frontier margin farther to the west and south, opening new territory to English settlement.

After Oliver Cromwell's forces secured Parliamentary power in England during the 1640s, immigration to the Chesapeake increased sharply as crown loyalists, many of whom were wealthy, sought refuge in the New World. Consequently, new plantations sprang up all over Virginia and Maryland, all of which required more indentured servants and slaves. Almost twenty new counties formed in Virginia and Maryland between 1646 and 1669, reflecting how rapidly the landscape was changing. At the same time, disease continued to ravage Native American populations, while colonial militias attacked their villages and burned their corn in response to the massacre of 1644.

Chesapeake wildlife felt the consequences of these demographic changes. By the 1660s, the wolf populations in Virginia had begun to peak, especially around the frontier edges of English settlement. The introduction of large grain fields, hedge rows, forest/field transitional habitats, and free-ranging livestock concentrated wildlife around plantations and increased the populations of animal species that could benefit from these changes. Livestock, especially hogs, competed with wildlife for browse and mast, forcing wild deer to seek food elsewhere, namely in plantation gardens or in wilderness areas beyond the livestock's range. At the same time, the requirements of Native American

subsistence hunting had reduced to such a degree that deer populations could recover. All these changes were beneficial to wolves, and their populations continued increasing for most of the first half of the seventeenth century.

Where there are more wolves, there will be more depredations. Consequently, there will also be more bounty claims. Although the number of wolf bounties did increase some during the 1650s and 1660s, the total number of claims remained fairly low. This is because Virginia's colonial population was still low and unconcentrated, and significant English settlement had not yet penetrated into the Piedmont hinterlands where wolves were most abundant. Also, the English colonists were content to raise cattle and hogs instead of sheep, the former being less vulnerable to predators.

This cycle repeated itself as English settlement moved inland. By the 1670s, interest in settling the hinterlands was rising, and a substantial Indian trade with tribes to the west and south was forming. Several frontier forts lined the fall line from the Potomac to the Appamattox. As the seventeenth century drew to a close, English society was squarely entrenched in the East. Budding towns and market centers were rapidly growing, plantations were flourishing, and the immigrant population was booming. The growing gentry class welcomed participation in traditional English hunting sports as the perceived threat of Indians in the nearby forests diminished and eastern settlements became more secure. Fowling and coursing became quite popular. While English culture was solidifying in the East, the decimation of Native American populations permitted settlement farther west. The English frontier expanded.

These changes required administrative adjustments, and government officials

redrew county lines. In 1691 and 1692, Norfolk, Princess Anne, King and Queen, Richmond, and Essex counties formed, pushing the bounds of English hegemony farther toward the Piedmont. The bounty cycle began anew. The resulting spike in the number of bounty payments was the obvious consequence, but the number of bounties (and bounty hunters) reached new highs during this period.

This was due to several reasons. First, the larger Piedmont wolf populations were now in closer proximity to colonial settlements. Second, Chesapeake deer populations were experiencing significant reductions at this time. Third, colonists had begun to raise more sheep on their plantations than ever before. Finally, wolves were a desirable quarry for traditional English hunting sports, and these sports were acquiring renewed popularity by the end of the seventeenth century.

The ambitions of Lieutenant Governor Alexander Spotswood instigated the next increase in bounties. His desire to push settlement far into the Piedmont as a buffer against the French farther west, and against the hostile northern Indians travelling through the Shenandoah Valley, culminated in the creation of two new settlements: Germanna on the Rapidan River, and Fort Christanna in southern Virginia. Germanna was an immigrant colony of indentured German laborers, sent to the frontier to mine minerals. Fort Christanna was a southern frontier fort designed to centralize the southern Indian tribes and regulate Indian trade. Established by 1714, these settlements pushed the English colonizers well into the interior, sparking the creation of several Piedmont counties by the 1720s. A few years later, the tide of English settlement flowed farther into the backcountry, extending into the Blue Ridge foothills and the Shenandoah Valley.

Even in southern Virginia, an area of historically thin English population, plantations and cattle ranges increased prodigiously. From 1720 to 1734, Virginia created eight new counties to accommodate the increased population, all of which extended west of the fall line or south of the James River. These counties were Prince William, King George, Spotsylvania, Orange, Caroline, Hanover, Brunswick, and Amelia. English domination of the Tidewater was nearly complete. The result was the largest and most consistent increase in wolf bounties in Virginia's history.

One obvious trend in bounty payments is that they peak at the end of, or shortly after, periods of county formation (Figure 5) . The subsequent decreases are rapid and sharp. The causes of these sudden declines are not easy to assess. Clearly, a region's ecosystem undergoes significant changes after the initial influx of new settlements stabilizes. Habitats changed as colonists cleared patches of forest and introduced free-ranging livestock. Wildlife adjusted to the new conditions. Wolves, in particular, are intelligent problem solvers and adapt quickly to the heightened presence of humans. Like most wild game today, wolves in the colonial period would have become more wary as human hunting pressure increased. They quickly learned to avoid anything bearing a human scent (especially traps), and hunted nocturnally as much as possible. Many wolves likely relocated to areas with fewer settlements, if there was enough wild food available.

As a result, hunting wolves became more difficult, more time consuming, and, in areas where wolves may have relocated, less necessary. After the colonists killed or dispersed the wolf packs that were on or near their plantations, they likely only killed wolves opportunistically, and only organized a wolf hunt or built pit traps if their

livestock were being eaten. Within a few years of the wolf killing peak, the number of wolf bounties quickly returned to lower, more constant levels.

#### ANIMAL HUSBANDRY AND ECOLOGICAL CHANGE

The growth of animal husbandry, especially shepherding, is closely linked to the expansion of English settlement. Because livestock had such a profound effect on wolf populations, it likely also contributed to the bounty fluctuations in Figures 4 and 5.

During the final decades of the seventeenth century, Virginia plantation owners were becoming increasingly self-reliant, and they encouraged local production of raw materials to decrease their dependence on European goods, including wool and mutton. At the same time, the increased wolf population, the expansion of English settlement, the introduction of English hunting sports, the strengthening of the Virginia deer skin trade, and over a decade of extremely cold years all began to take their toll on the Chesapeake deer populations. English farms sprouted farther and farther west, and the frontier ranges for cattle and hogs extended well beyond the fall line. As the number of woodland acres decreased, wild pasturage for browsing cattle and pannaging swine also decreased, and pastures opened.<sup>57</sup> Consequently, the number of sheep in Virginia began to grow. As the wolves' primary wild food source diminished, the bulging wolf population began invading colonial plantations more frequently, killing poultry and livestock.

The successful introduction of sheep marks a decisive shift in the Chesapeake ecological system. When European ships first spied the Chesapeake shores in the

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<sup>57</sup> Lorena Walsh, Ann Martin, and Joanne Bowen, "Provisioning Early American Towns," 55-59.

sixteenth and seventeenth centuries, the Chesapeake landscape was mostly inhospitable to sheep. The lack of open, well-drained pasture and the presence of wild predators made shepherding a virtual impossibility in the Tidewater. Around the turn of the eighteenth century, these environmental traits no longer characterized many local areas. Changes were already becoming evident by 1687. Durand of Dauphine, a Frenchman, wrote that only half of a typical Virginia plantation was composed of woodland. The other half was evenly divided between pasture and cultivated fields.<sup>58</sup> This was a noticeable change from previous decades.

Once the Virginia government moved the colonial capital to Williamsburg in 1699, the slow process of urbanization began. Rural plantations began supplying eastern towns and markets with staple supplies, so animal husbandry became a necessary source of supplemental income, rather than just a means of subsistence. By the 1730s, market distribution systems took a solid hold, and rural farmers were raising surplus cattle for sale in town markets. As discussed earlier, mutton was a growing part of this market system.

According to zooarchaeologists, the slaughter ages of livestock evident in faunal remains show that, by the early eighteenth century, Chesapeake colonists raising cattle for market slaughtered them as early as about 3 1/2 years. So, colonists had to manage their livestock more carefully to prevent economic losses. Pens began to co-exist with

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<sup>58</sup> Durand of Dauphine, *Voyages d'un Francois Exile' Pour la Religion avec une Description de la Virgine et Marilan dans L'Amerique*, 151.

woodland pasturage,<sup>59</sup> and colonists were more vigilant in protecting their young and pregnant livestock from predators. As could be expected, colonists' tolerance for wolf depredations waned. The result was the improvement and clarification of bounty laws in 1691, 1696, 1705, and 1720.

The probate inventory records of York County are an excellent historical source for examining these changes to the colonial plantation economy and how they affected wolf hunting. The probate data clearly reveal some interesting trends. Sheep do not appear in York County probate inventories until 1661, but their numbers are insignificant until at least the 1680s. The number of sheep in the probate inventories then begins to sharply increase around 1710, and peaks in 1719 (Figure 6).

Not only was the number of sheep growing steadily in York County in the final years of the seventeenth century, but more people owned sheep. According to Walsh, Martin, and Bowen, sheep constituted only nine percent of the total livestock in York County inventories between 1660 and 1700. From 1700 to 1750, that number increased to seventeen percent.<sup>60</sup> Despite this increase in the total number of sheep, the colonists who owned sheep continued to maintain small to medium sized flocks. From 1660 to 1750, the average number of sheep per colonist hovered around twenty. Tables 2 and 3 show that, until 1710, 34 percent of colonists who owned sheep kept flocks of 10 or fewer, and 82 percent kept 30 or fewer. In almost 100 years, only fifteen colonists in York County

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<sup>59</sup>Vanessa E. Patrick, "Partitioning the Landscape: Fences in Colonial Virginia," *Magazine Antiques* (July 2998): 96-106.

<sup>60</sup>Lorena Walsh, Ann Martin, and Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," 16. 51-59. 72.

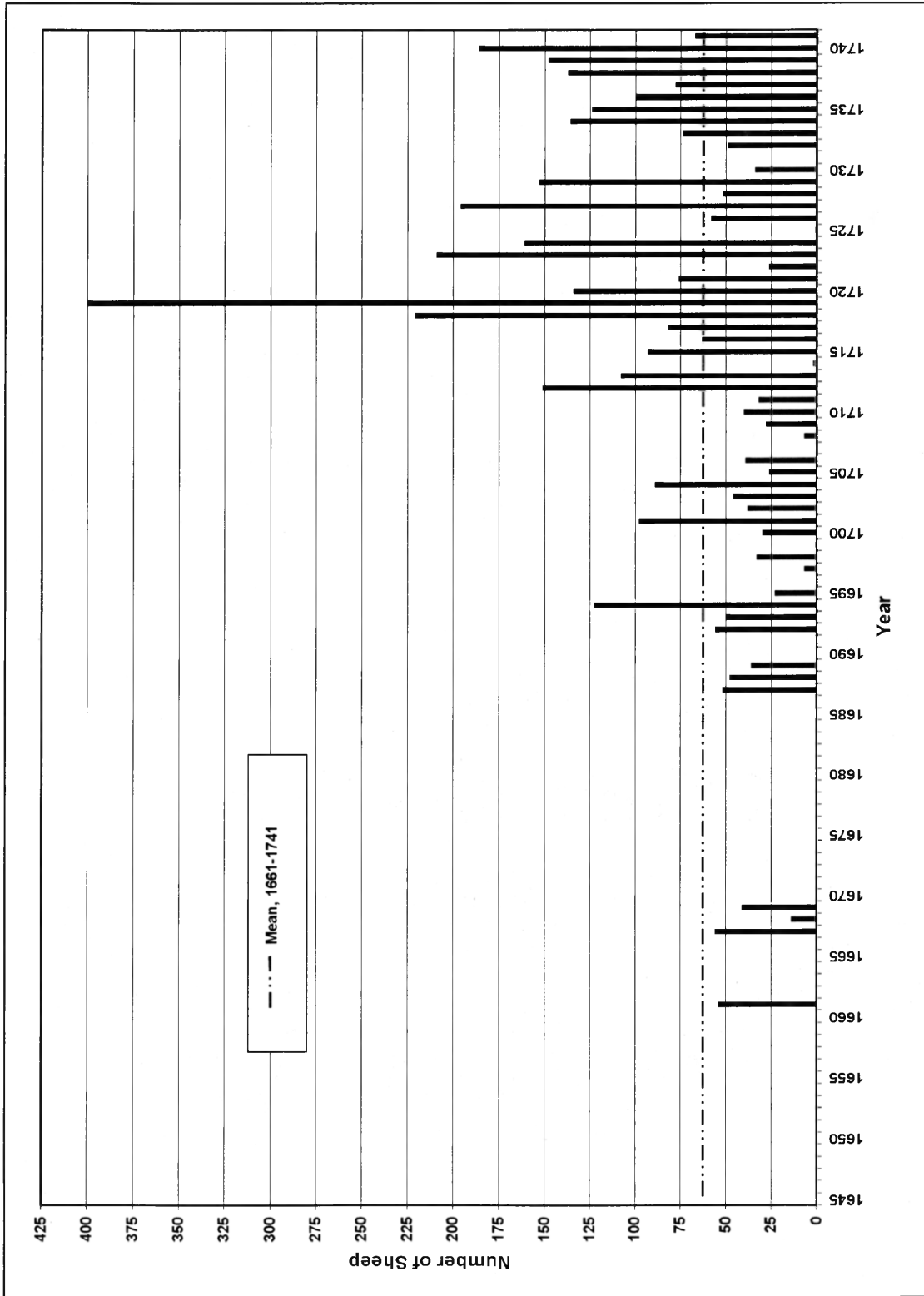


Figure 6. Number of Sheep in York County Probate Inventories, 1645-1741.

TABLE 2  
SHEEP OWNERSHIP AND FLOCK SIZE IN YORK COUNTY

Time Period	# of Sheep Owners	Number of Sheep Owned						Avg. Sheep per Owner
		1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51+	
1661-1690	15	5	5	3	0	1	1	20
1691-1710	35	12	7	9	4	1	2	21
1711-1730	132	56	39	20	5	5	7	17
1731-1750	91	22	29	23	10	2	5	21
<b>1661-1750</b>	<b>273</b>	<b>95</b>	<b>80</b>	<b>55</b>	<b>19</b>	<b>9</b>	<b>15</b>	<b>19</b>

TABLE 3  
SHEEP OWNERSHIP AND FLOCK SIZE PERCENTAGES IN YORK COUNTY

Time Period	# of Sheep Owners	Number of Sheep Owned					
		1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51+
1661-1690	15	33%	33%	20%	0	7%	7%
1691-1710	35	34%	20%	26%	11%	3%	6%
1711-1730	132	42%	30%	15%	4%	4%	5%
1731-1750	91	24%	32%	25%	11%	2%	5%
<b>1661-1750</b>	<b>273</b>	<b>35%</b>	<b>29%</b>	<b>20%</b>	<b>7%</b>	<b>3%</b>	<b>5%</b>

recorded more than 50 sheep in their probate inventories. These numbers indicate that, although the total number of sheep in York County were obviously increasing in the eighteenth century, the increase was not because the wealthiest colonists were increasing the size of their flocks. The colonial population was increasing, and a larger percentage of colonists owned small to medium sized flocks. This suggests that sheep were not concentrated on a few elite plantations; instead, they were spread much more evenly across the landscape.

This virtually instantaneous increase in the number of sheep and sheep owners in York County requires an explanation. Clearly, many circumstances caused these significant changes—most notably, the increasing presence of pasture land and the growth of urban markets. Could wild predators have also played a role?

A comparison of the available York County bounty data and probate inventories presents some tantalizing evidence that the introduction of sheep in the mid-seventeenth century impacted the rise of bounty hunting, and the eventual extirpation of wolves impacted the sudden growth of sheep husbandry in the eighteenth century. Sheep do not appear in any York County inventories until 1661, just a few years before the number of bounty payments peak in that county. More importantly, the sharpest increase in both the number of sheep and the number of sheep owners begins around 1710, immediately following the approximate date of wolf extirpation in York County. Wolves were a problem for anyone wishing to raise sheep, and the data strongly suggest that a direct correlation exists between the extirpation of wolves and the growth of sheep husbandry in Virginia. When colonists introduced sheep, the number of bounties increased. Several

decades later, when the number of bounty payments fell to almost zero, sheep husbandry flourished. One should not be surprised, then, that the period of the most favorable bounty laws (1691-1720), coincides with the period of increased shepherding. All this evidence is circumstantial, but cannot possibly be a mere coincidence (Figure 7).

## REGIONAL VARIATION

One feature of the bounty payment data that the preceding graphs do not show is that local counties and regions show differences in the number of bounties colonists claimed. For example, the counties on the Lower and Middle Peninsulas (i.e., the Tidewater land between the James and York Rivers, and the York and Rappahannock Rivers) claimed fewer bounties than anywhere else in the Chesapeake mainland. York County paid an average of less than three bounties per year from 1645 to 1741,<sup>61</sup> totaling a meager 167 bounties. Both Elizabeth City County, which borders York County on the eastern tip of the Lower Peninsula, and Middlesex County, lying between the York and Rappahannock Rivers, exhibited a similar pattern. No other counties with complete levy records paid so few bounties, so consistently, year after year.

Counties south of the James River and on the Northern Neck (i.e., between the Rappahannock and Potomac Rivers) paid substantially more bounties than the areas discussed above. Lower Norfolk County (divided into Norfolk and Princess Anne counties in 1691) paid over seven times as many bounties as York County paid (a total of 1,268), and counties in the Northern Neck averaged almost 20 per year. Northumberland

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<sup>61</sup> There were a few exceptions. York paid 17 bounties in 1666, 13 in 1673, and 11 in 1679.

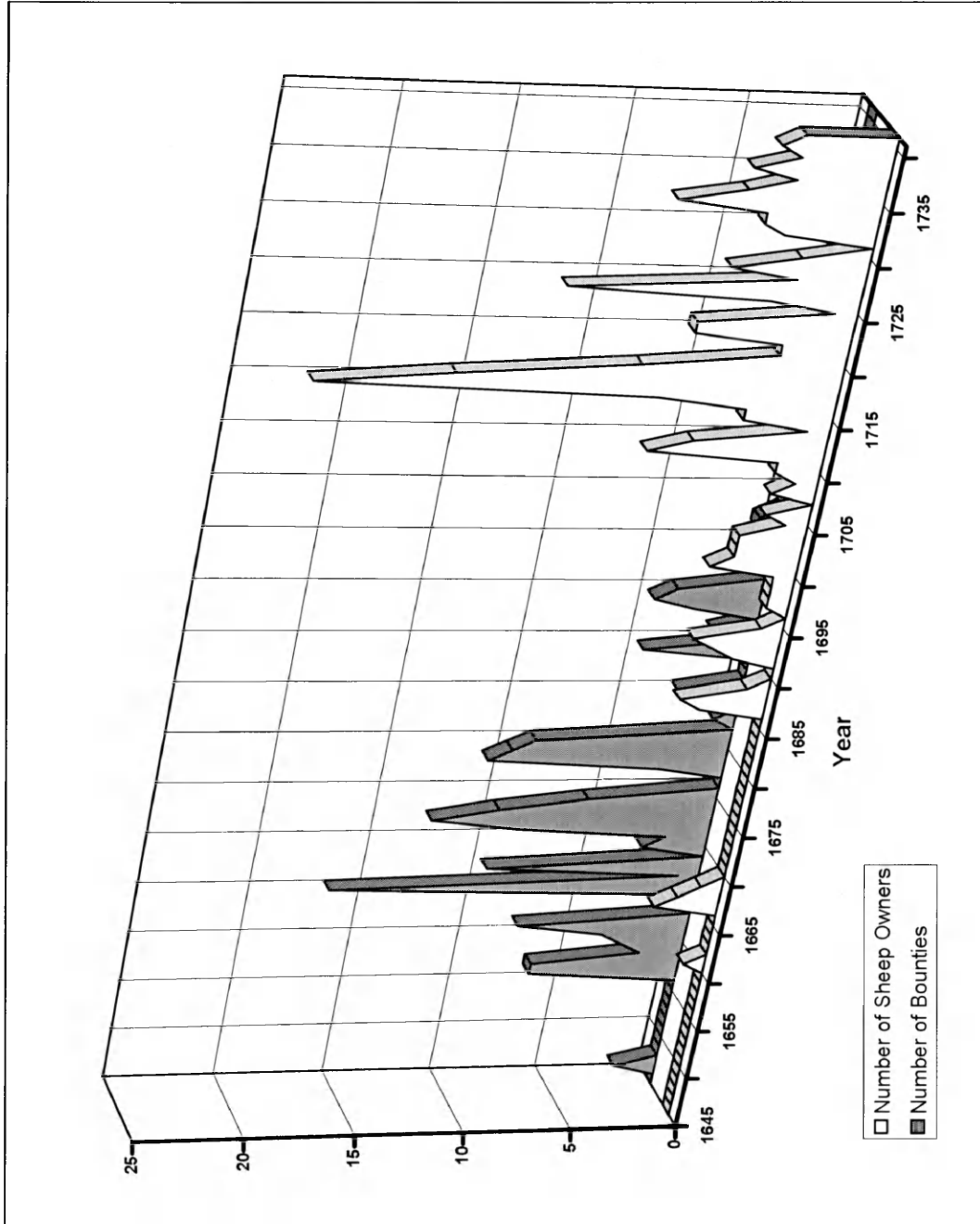


Figure 7. Comparison of Wolf Bounties and the Number of Sheep Owners in York County, Virginia, 1645-1741

County alone accounted for 508 dead wolves, over three times as many as York, Elizabeth City, or Middlesex.

These conspicuous regional differences demand explanation. Unfortunately, a conclusive one is not easily forthcoming. York and Elizabeth City counties are the only counties on the Lower Peninsula (i.e., the Tidewater area between the James and York Rivers) that have enough extant bounty records to form reliable conclusions. Perhaps the Lower Peninsula simply could not support a significant wolf population. The Lower Peninsula is the most narrow peninsula in the Tidewater, which would restrict a wolf pack's hunting range and breeding success. Optimal den sites are rare. In addition, wolves on the peninsula could not compete with the area's large Native population prior to English colonization. After colonization began, the Lower Peninsula was the center of English colonization in Virginia. Perhaps by the mid-seventeenth century, wolves simply were not enough of a problem in the local region to warrant excessive wolf hunting.

In contrast to the Lower Peninsula, Tidewater counties south of the James River (i.e., Lower Norfolk County, which became Norfolk and Princess Anne counties in 1691), and in the Northern Neck consistently paid a high number of bounties. Chances are, this is because the local wolves attacked more livestock in these areas, especially by the eighteenth century. Several factors caused the unacceptable rate of livestock depredations.

In the Northern Neck, English colonists did not settle the land until the 1640s. Prior to that time, the region was an open wilderness—even the local Indian population was sparse, reduced by war and epidemics. Any wolves in the area would have had ample

hunting space and little human competition. Once the English opened the Northern Neck to settlement, the wolves increased prodigiously. The result was more depredations and a high number of bounties.

The high number of bounties in counties south of the James River is attributable to similar causes. The English were slow to settle the southern region because of the lack of navigable rivers and the predominance of swamp land. As late as 1738, the Virginia General Assembly had to pass legislation that would encourage settlement in the southern regions, because the land was "for the most part unseated and uncultivated."<sup>62</sup> Although the lack of human competition may have improved the wolves' natural food supply, the warm, humid climate and the swampy lowlands created a habitat that was not favorable to grey wolves. Consequently, the wolves that did manage to thrive likely congregated around the English plantations, where land was better drained and where livestock were plentiful.

By 1691, settlement had increased enough to warrant the formation of Norfolk and Princess Anne counties. Although the colonists were having trouble with predators, the predominance of inhospitable swamp land made ranging abroad in search of wolves difficult. Consequently, the inhabitants of Princess Anne County used pit traps more than any other method. As discussed earlier, pit traps tended to be the most efficient killing method, which may have contributed to the increased number of bounty payments in this region.

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<sup>62</sup> William Waller Hening, *The Statutes at Large; Being a Collection of all the Laws of Virginia, from the First Session of the Legislature, in the Year 1619* (Richmond: Samuel Pleasants, Jr., 1809-1823), 5:57.

Although the number of bounties varied among Tidewater counties, the more pronounced regional differences occurred during periods of westward expansion. Generally speaking, as settlement became denser in the East, and expanded toward the West, the number of bounties claimed in eastern counties gradually diminished, while the numbers claimed in western counties sharply increased. It is no surprise that counties closest to the western frontiers paid more bounties than their eastern counterparts. As Figure 8 shows, Tidewater counties closer to the fall line posted two to three times more bounties than counties in the eastern portions of the peninsula.

This pattern becomes even more obvious in the 1720s, when English settlement pushed into the Piedmont and toward the Blue Ridge mountains. The difference between the number of bounties claimed in Piedmont counties versus Tidewater counties is striking. While bounties steadily decreased in the Tidewater, the newly formed Piedmont counties could hardly afford the unprecedented numbers of bounty claims. Figure 9 conclusively demonstrates this trend.

Like the Tidewater counties, Piedmont counties also exhibited significant variation in the numbers of bounties paid. Over thirty percent of all the bounty payments recorded in Piedmont counties prior to 1742 were recorded in Brunswick County alone. The closest runner-ups were Spotsylvania and Orange counties, with 18 and 14 percent, respectively.<sup>63</sup> In 1732, the first year of its establishment, Brunswick County paid only 18 bounties for dead wolves. In just one levy season, the number of bounties increased

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<sup>63</sup> Note, however, that most records from the central Piedmont counties are no longer extant.

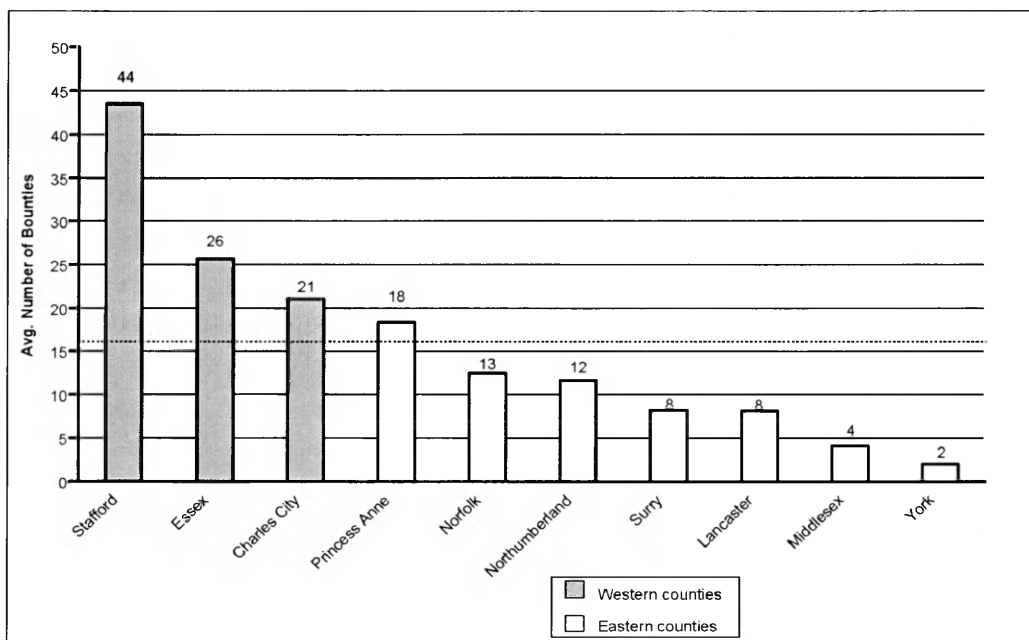


Figure 8. Comparison of Wolf Bounties in Tidewater Counties, 1690-1700.

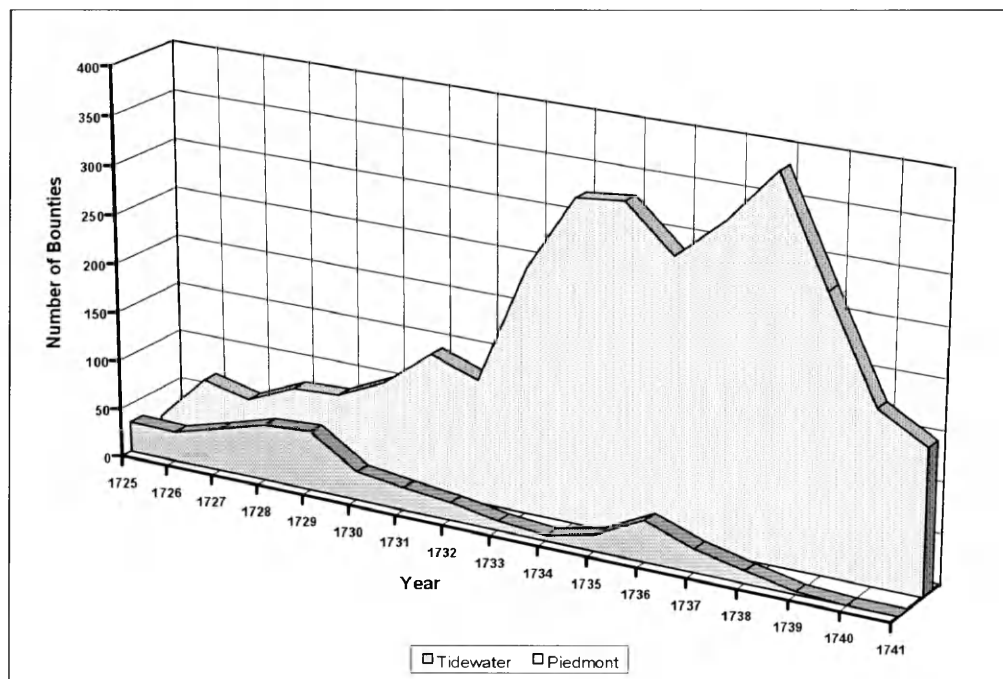


Figure 9. Comparison of Wolf Bounties in the Tidewater and Piedmont, 1725-1741.

almost eight times to 140. After 1732, Brunswick County averaged over 130 wolf bounties each year, a trend that continued until 1741 when the number of Brunswick bounties plummeted by over forty percent (Figure 10).

Exactly why Brunswick County claimed more bounties than any other county in Virginia is unclear. Unlike the rest of Virginia, English settlement in the Southside did not extend much beyond the banks of the Appomattox and the James Rivers until the eighteenth century. The Virginia General Assembly did not create a government for Brunswick County until 1732, when Virginia and North Carolina were both settling the region and surveying the border between the two colonies. The lack of navigable rivers and the predominance of low swampland hindered travel and prevented settlement.

Perhaps the lack of an English presence gave wolves some refuge, allowing them room to proliferate in wilderness areas while still being close enough to the English to enjoy an occasional calf or piglet. Brunswick County was also ideally situated for the north-south Indian trade routes into North and South Carolina. Brunswick traders would have had ample opportunity to kill wolves on their own, or to purchase them from Indians.

Bounty records for Spotsylvania and Orange counties show a similar pattern of increase and decline. Virginia created Spotsylvania County in 1720, although levy records do not exist prior to 1724. In 1724, Spotsylvania County began averaging almost 50 bounties annually. A decade later, many settlers had moved toward the western fringes of the county, prompting the creation of Orange County. Not surprisingly, Spotsylvania wolf bounties peaked that year, at 103. With the more rural western lands now in a

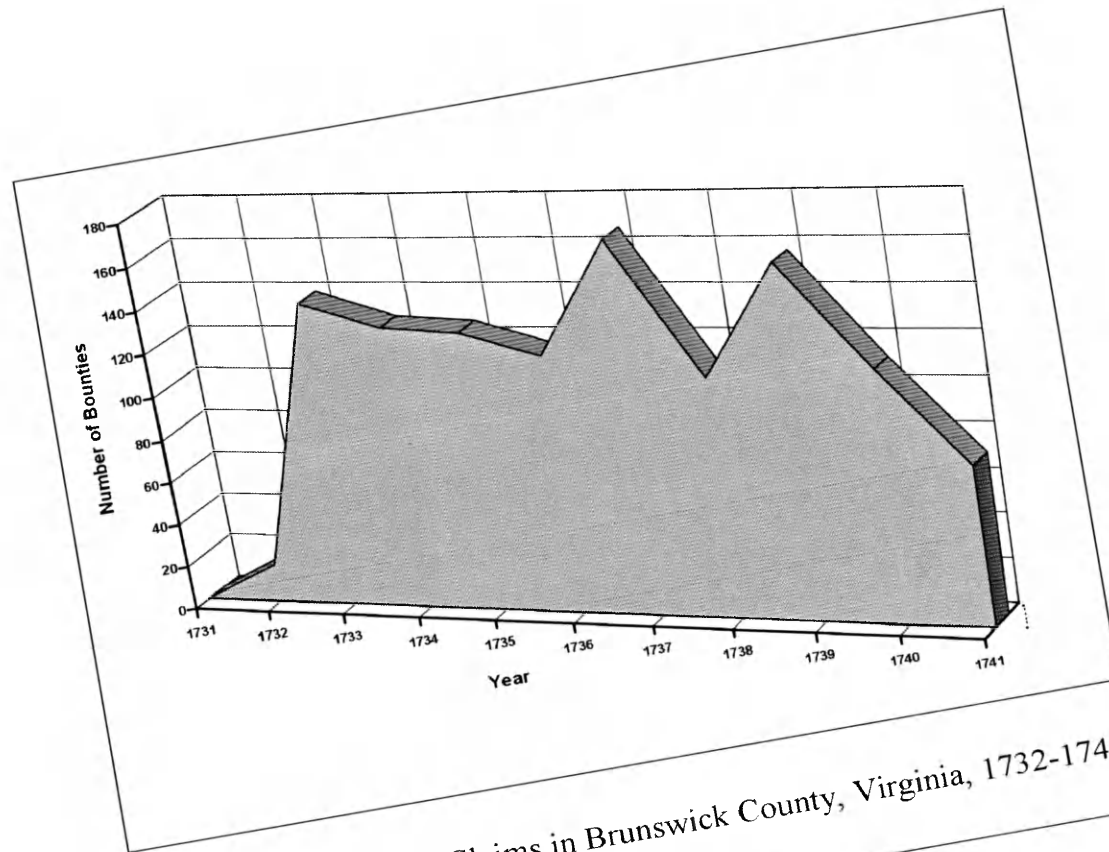


Figure 10. Wolf Bounty Claims in Brunswick County, Virginia, 1732-1741.

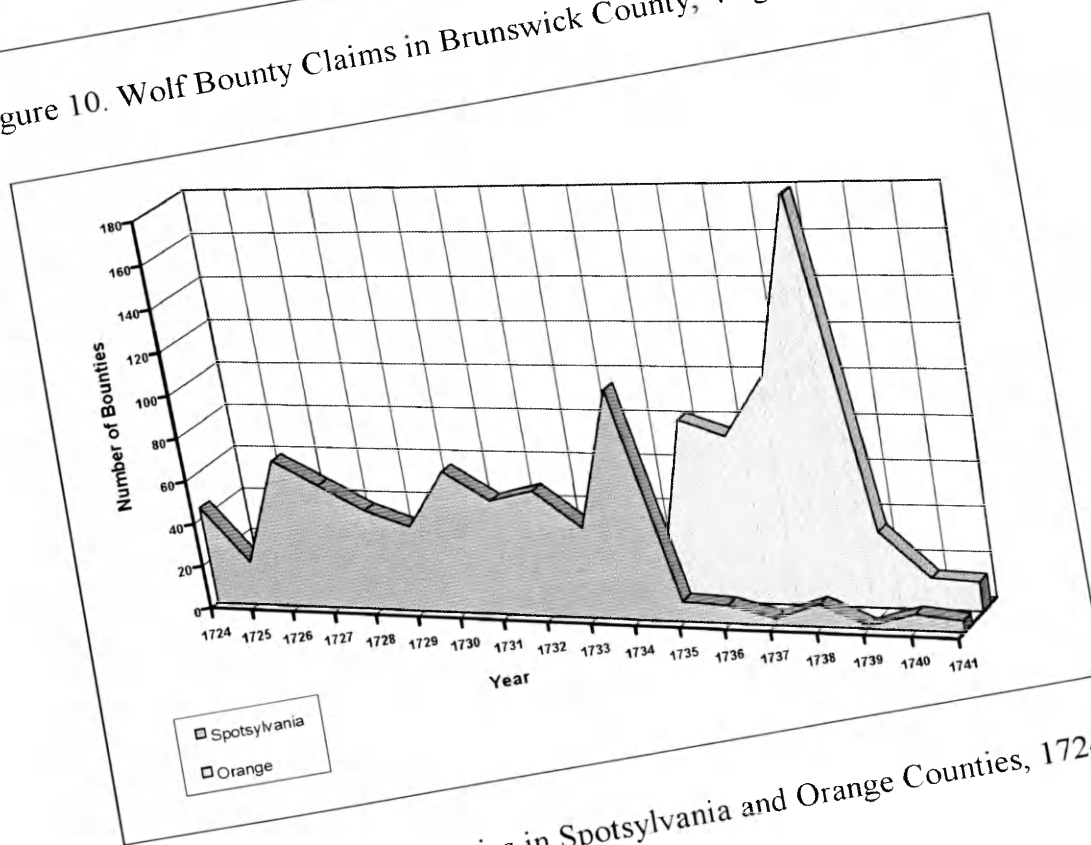


Figure 11. Comparison of Bounties in Spotsylvania and Orange Counties, 1724-1741.

different jurisdiction, Spotsylvania bounties dropped over 90 percent the following year, while Orange County bounties continued to climb (Figure 11).

By 1738, a "great number of people" had "settled themselves of late on the NW side of the blue ridge," prompting the formation of Frederick and Augusta counties. However, the Virginia Assembly did not permit these counties to have their own government and courthouse until they had reached a sufficiently high population. All administration was to be done in Orange, far to the east.

Interestingly, the Virginia General Assembly made a point to state that "no allowance be made for killing wolves within the limits of said new counties." This was because new settlers in this region were exempt from paying into the county levy (the government implemented this policy to encourage settlement). Eastern Orange County inhabitants did not want to pay for the high number of bounties that would result from the remote western settlements, when the people who would benefit most from those bounties (the western settlers) did not contribute to the cost.

Predictably, Orange County bounties diminished as settlers entered lands even farther to the west, just as they had in Spotsylvania a few years before. Not only had new settlement created a buffer against invading wolves, but the county was not paying bounties for wolves killed in the western regions that were under its own administration.

This situation changed in 1742 when the Assembly altered these regulations. Although colonists in the far western regions still answered to the Orange County government, they had to begin contributing to the local levy. Each settler in Augusta was required to pay two shillings, applied to "hiring persons to destroy wolves, and relieving

the poor, . . . and building bridges, and clearing roads." A similar law did not extend to Frederick County until 1744, when the local inhabitants requested a levy to pay for wolf bounties. The county would pay two shillings and six pence for a young wolf, and six shillings for an old wolf, resurrecting the old practice of paying for bounties based on age. If cash was unavailable, colonists could pay the levy in grain.<sup>64</sup> The obvious consequence was a decrease in the Orange County bounties, and an increase in Frederick and Augusta bounties as Europeans settled these areas.

## EXTIRPATION

To borrow a phrase from Clifford Geertz, the eminent anthropologist, "Such are the facts. Or, anyway, so I say."<sup>65</sup> But what do these "facts" mean to the broader picture of ecological change? As discussed above, the data clearly show that the number of wolves killed for bounties did not remain constant as English settlement progressed. The colonists killed more wolves during periods of county formation, especially when establishing farms in previously unsettled regions. Additionally, there was some regional variance. Land west of the fall line contained more wolves, and the number of bounties in the western regions far exceeded those in the Tidewater. The southern portion of Virginia paid more bounties than anywhere else until 1741 (although the northern Piedmont is a close second), and counties on or near the Lower Peninsula paid the fewest. This regional variance was due to human settlement patterns and local environmental characteristics.

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<sup>64</sup> William Waller Hening, *The Statutes at Large*, 5:78-80, 187-189, 265.

<sup>65</sup> Clifford Geertz, *After the Fact*, 17.

These same characteristics explain why colonists could still find wolves in some regions long after they had been extirpated from others.

This data also shows that the number of bounty claims was considerably higher in western regions, suggesting that Virginia wolf populations steadily retreated toward the mountains as English settlement moved westward, and that the uplands likely had a larger wolf population than the Tidewater to begin with. The data also show that colonists tended to not venture far and wide in search of wolves; rather, they killed wolves for bounties in areas near their settlements, because those wolves killed more of their livestock.

Despite the temporal and geographic variance described in the preceding sections, the fact remains that colonists, Indians, slaves, and indentured servants all across the Chesapeake received bounty payments for dead wolves every year (except 1676), from 1645 to 1741. Clearly, bounty hunting had to have some effect on the Chesapeake ecosystem. At least one Virginian, Lt. Governor Drysdale, observed those effects firsthand. In a letter dated 10 July 1726, Drysdale assessed the benefits of the county levy taxes, "the greatest part of which has arisen by the rewards given for killing of wolves in the fronteer counties, and is so usefull an expense, that ye inland parts are by itt freed from those destructive animals."<sup>66</sup> Drysdale's statement provides some clues as to how the Chesapeake wolf populations had transformed by the eighteenth century. The implication is that, by the 1720s, wolves in the east were mostly destroyed, and they were

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<sup>66</sup> Lt. Governor Drysdale to the Council of Trade and Plantations, 10 July 1726, in *Calendar of State Papers, Colonial: North America and the West Indies, 1574-1739*, CD-ROM (London: Routledge, Public Record Office, 2000), Item 215, vol. 35 (1726-1727), 109-115.

starting to dwindle on the frontier. When did this process of extirpation begin, and what caused it?

David Hardin notes that the available bounty records can provide a crucial insight into the approximate time when wolves disappeared from a particular county or region. For historical ecologists, this is an extremely fruitful avenue of research, one that offers tangible historical data for assessing how the human component of the Chesapeake Bay's terrestrial ecosystem affected the ecosystem as a whole. When bounty payments cease in a local area while bounty laws and levy taxes are still in effect, one can assume that wolves no longer frequent that county. For all practical purposes, once a county stops paying more than two or three bounties per year, one can assume that wolves are no longer a significant part of that county's local ecological system. A pack may kill a few deer or livestock while traveling, but den sites probably were no longer present, and frequent depredations were no longer a concern.

Of course, extirpation did not happen uniformly across the landscape. The data show considerable regional differences, again mirroring the pattern of English settlement. David Hardin has charted the progress of wolf extirpation on a map. For the most part, my analysis agrees with Hardin's. The Eastern Shore has only a few extant bounty records, but a deposition in one county court hearing demonstrates that wolves were still occasional nuisances as late as 1667. According to this deposition, a wolf bit a two year old steer at the Oaken Hall plantation in August 1667. In addition, Eastern Shore counties were actively involved in the creation of bounty legislation at least until 1699, when Accomack and Northampton petitioned the General Assembly for changes. This suggests

that these counties were still paying wolf bounties at least until the turn of the eighteenth century.<sup>67</sup>

The Lower Peninsula seems to be the first region to conclusively abolish livestock depredations. York County was basically wolf-free by 1697, and Elizabeth City County quickly followed sometime between 1700 and 1719 (there is a gap in Elizabeth City's records from 1700-1719; in 1699, the county paid nine bounties, and never paid another one after 1719). The eastern regions of the Northern Neck and the Middle peninsula extirpated wolves around the same time. Lancaster County paid no more bounties after 1700, and Northumberland and Middlesex counties ceased payments by 1709 and 1714, respectively. By 1726, the threat of wild predators and hostile Indians had diminished so much that William Byrd wrote, "We can travel all over the country by night and day, unguarded and unarmed." Hugh Jones told his readers that

There is no danger of wild beasts in traveling; for the wolves and bears, which are up the country, never attack any, unless they be first assaulted and hurt; and the wolves of late are much destroyed by virtue of a law, which allows good rewards for their heads . . . .<sup>68</sup>

The Chesapeake landscape was clearly changing.

Wolves in the southern Tidewater counties took much longer to disappear than elsewhere—several decades longer in some local areas. The slow development of English

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<sup>67</sup> David S. Hardin, "Laws of Nature: Wildlife Management Legislation in Colonial Virginia," in *The American Environment: Interpretations of Past Geographies*, ed. Lary M. Dilsaver and Craig E. Colten, 152-153.; JoAnn Riley McKey, *Accomack, County, Virginia, Court Order Abstracts: 1666-1670* (Bowie, MD: Heritage Books, Inc.), 121; Henry Norwood, *A Voyage to Virginia* (1649), in Peter Force, ed., *Tracts and Other Papers*, 3(10):27.

<sup>68</sup> William Byrd to Charles. Earl of Orrery, 5 July 1726, in *Virginia Magazine of History and Biography* 32 (1924): 27; Hugh Jones, *The Present State of Virginia*, 85.

settlement south of the James River preserved the southern wolf population much longer than in other Tidewater areas. Norfolk County did not pay its last bounty until some time after 1731, and Princess Anne took at least another eight years. Surry County was still paying dozens of wolf bounties as late as 1717, so wolves likely remained in that County until after 1740. Around the same time, wolves were diminishing in counties farther west. Essex, Richmond, Caroline, and King George all stopped paying bounties by the mid-1730s. The rest of the Piedmont counties continued paying lots of bounties well beyond 1741. Hardin suggests that many of the Piedmont counties contained wolves at least until 1760, and wolves found safe haven in counties west of the Blue Ridge mountains until 1780 or later.

The obvious questions historical ecologists must answer are these: were these early predator management plans successful? Did human predation alone cause the destruction of the regional wolf population? The answer is a qualified “probably not.” One should remember that wolf populations were probably low prior to English colonization, and only increased after English agricultural practices improved the available food. Hunting wolves for bounties did not begin until four decades after the establishment of the first English settlement. After that, almost fifty years passed before the slow process of extirpation began in the Chesapeake's easternmost regions (where wolf populations were lowest to begin with), and almost a century went by before wolves became a rarity in the eastern Piedmont near the fall line. Another hundred years passed before wolves disappeared from the mountain regions and the Shenandoah Valley.

Current research shows that predator populations can sustain an annual mortality

rate of 25-40% without any appreciable effects, and wolf populations must annually decrease by up to 80 percent before the annual mortality rate will exceed the annual recruitment rate and cause significant and sustained population reductions.<sup>69</sup> Furthermore, wolves must experience this 80 percent reduction for several consecutive years before the general population will be in danger of extirpation. From 1645 (the year of the first extant bounty recorded in Virginia) to 1741, Virginia counties recorded 8,090 bounties, or an average of 83 wolves per year. Recorded bounties never exceeded 396 in a single year, and prior to 1690 they never exceeded 100. As a point of comparison, the modern wolf population in Minnesota is around 2,600 individual wolves. Because this modern population is currently in the process of recovery, the colonial wolf population in the Chesapeake was likely similar or slightly higher. According to current estimates, an area the size of Maryland and Virginia could support up to 5000 wolves, with an approximate average of 2000. Even if the total number of recorded wolf bounties in colonial Virginia represents only 25 percent of the total number of wolves actually killed (increasing the average annual kill to 332) bounties still could not have killed enough wolves to result in total extirpation. The annual kill rate simply was not high enough, even in the eastern Tidewater where total wolf populations were lower.

Although these are important points to make, I do not want to overstate them, or

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<sup>69</sup> R.D. Boertje, P. Valkenburg, and M.E. McNay, "Increases in Moose, Caribou, and Wolves Following Wolf Control in Alaska," *Journal of Wildlife Management* 60 (July 1996), 474-489; W.C. Gasaway, R.O. Stephenson, et. al., "Interrelationships of Wolves, Prey, and Man in Interior Alaska," *Wildlife Monographs* 84 (Washington, DC: Wildlife Society, 1983); Peter Steinhart, *The Company of Wolves*, 36; Ben H. Koerth, "Are Predators Hurting Your Deer Herd?" *North American Whitetail* 21 (January 2002): 28-32; Bruce Hampton, *The Great American Wolf*, 7, 22.

downplay the effects of bounty hunting. Analyzing the statewide averages over long periods of time is a poor measure of ecological impact. Anthropomorphic ecological change almost always occurs first at the local level, and the local effects of bounty hunting over shorter periods of time could be severe. Colonists killed fewer than 80 wolves for 64 out the 97 years in the present study, which is indisputable evidence that, for most of the seventeenth and early eighteenth centuries, bounty hunting could not have significantly impacted the regional Chesapeake wolf population. However, the spikes that occurred in the 1690s and the 1730s could have had intense local effects. From 1692 to 1695, Tidewater colonists killed a total of 543 wolves, or an average of 137 per year. In small, localized areas (i.e., several bordering plantations or a small peninsula), colonists may have killed the eighty percent requirement, and bounty hunting may have drastically reduced the wolf population of that specific, localized area. This is especially true when one considers that about half of the Tidewater counties have no extant records during those years.

Bounty hunting likely had an even more intense local effect once English settlers reached to the Shenandoah Valley in the 1740s. In the 1730s, the number of wolves killed in the Virginia Piedmont is impressive. From 1733 until 1739, Virginia counties recorded a total of 2,285 wolf bounties, or an average of 326 per year. Considering that the records from Stafford, Prince William, Henrico, and Hanover counties are missing for those years, this high number of bounties could have been the harbinger of the wolves' demise in the Piedmont.

I must stress the words "could have been." Unfortunately, without an accurate

estimate of the size of the local and regional wolf populations four centuries ago, these statistics offer little more than a departure point for speculation. The fact remains that, unless these infrequent periods of intense bounty hunting were occurring all over the colony at the same time (and they clearly were not), the colonists were fighting a losing battle, at least until the second half of the eighteenth century.

So, if humans were not consistently killing enough wolves to cause severe population declines, what else might have contributed to the wolves' extirpation? While we can't discuss short-term wolf population fluctuations with any degree of certainty, we do know that a variety of detrimental ecological factors ultimately destroyed the wolves in the Chesapeake. The most likely candidate is a lack of food. Food shortages are the leading cause of wolf mortality in the wild. Food shortages cause internal strife within a wolf pack, increase the size of hunting territories, instigate violence between competing packs, reduce pack sizes, limit reproduction, and affect the general health of pups. All of these effects combine to reduce wolf populations.<sup>70</sup>

The cycle of English settlement restructured wolf hunting habits and eventually reduced food sources, causing wolf populations to slowly diminish. Every wolf annually requires the dietary equivalent of 15 to 20 deer. Initially, English plantations increased

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<sup>70</sup> Wolf population dynamics is a subject of continual research and debate. See Glenn D. DeGiudice, *The Ecological Relationship of Grey Wolves and White-tailed Deer in Minnesota* (Minnesota: Department of Natural Resources, 1998); Elizabeth Harper "Wolf Predation on Ungulates," International Wolf Center, 2002. Internet on-line, available from <<http://vafwis.org/perl/vafwis.pl/vafwis>> [2002]; L. David Mech and Ian McTaggart, *The Wolf: The Ecology and Behavior of an Endangered Species* (Minneapolis: University of Minnesota Press, 1985); L. David Mech and Robert Bateman, *The Way of the Wolf* (Stillwater, MN: Voyager Press, 1991); Bruce Hampton, *The Great American Wolf* (New York: Henry Holt and Company, 1997); Barry Lopez, *Of Wolves and Men* (Charles Scribner's Sons, New York, 1978); Peter Steinhart, *The Company of Wolves* (New York: Alfred Knopf, 1995).

the abundance and availability of food, both for ungulates and their predators. Eventually, the increased hunting pressure from both humans and wolves and the competition for browse and mast from growing numbers of free-ranging domestic animals led to declines in wolves' primary food source. Zooarchaeologists indicate that by the eighteenth century, free-ranging livestock had altered woodland ecology to such a degree that the wild forests could not adequately support the ever-increasing populations of domestic stock. The result was that cattle and hogs experienced a reduction in size, weight gain, fertility, and over-all health.<sup>71</sup> If this was the case for the livestock, it was certainly true for other wildlife that depended on the same mast and herbaceous plants. Wolves were closely bound to this increasingly inhospitable ecosystem, and would have felt disastrous effects. John Lawson provides evidence of struggling wolves in the early eighteenth century, saying "They are often so poor, that they can hardly run."<sup>72</sup>

The passage of two laws in the late seventeenth century reveals much about how the Virginia ecosystem was changing. In March 1674 and 1692/93, the Virginia Assembly passed "An act concerning Indian hoggs. "Some Native groups, particularly the "Notoway" and "Weyonock," had begun keeping enough pigs by the 1670s that the colonial government felt like they had to be regulated. To prevent disputes of ownership, both on the part of the English and the Native Americans, each Native town had to mark their hogs. By the 1690s, Indian-owned hogs were so commonplace that the Assembly

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<sup>71</sup> Lorena Walsh, Ann Smart Martin, and Joanne Bowen, "Provisioning Early American Towns. The Chesapeake: A Multidisciplinary Case Study," 39-41.

<sup>72</sup> John Lawson, *A New Voyage to Carolana*, 91.

had to impose further regulation. There were so many different Indian marks on hogs that Indian hogs were being confused with English hogs. Also, some Indians were stealing English hogs, slaughtering them, and then selling the meat back to the English or using it for themselves.<sup>73</sup>

That some Native American tribes had begun using hogs instead of venison for both their trade and their subsistence is indicative of dramatic ecological and cultural change. Either the traditional hunting culture of some Native groups had become so diluted that some Native towns implemented domestication practices, or wild pigs had displaced deer in Virginia's eastern regions to such a degree that Indians could no longer rely on deer as their primary source for meat and skins.

That deer populations had greatly diminished by the eighteenth century is also evidenced by the passage of Virginia's first wildlife conservation law in 1699. By 1699, the English had decimated or displaced most Native Americans, English plantation settlements were more numerous and less dispersed, and a town center was forming at Williamsburg. Virginia's entire ecology was changing, and deer were struggling. The larger wolf population had exacted a heavy toll. Wild forage and forested land area between settlements was decreasing. Fire hunting continued to be a problem, and Virginia was struggling to compete with South Carolina for the deer skin trade. The colonists could see the writing on the wall—the landscape was not the same as it was when they first arrived, and they knew from England's experience what would happen to

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<sup>73</sup> William Waller Hening, *The Statutes at Large*, 2:109.

wild game if they allowed these circumstances to continue.<sup>74</sup>

The 1699 conservation law, and another one passed in 1705, established the first deer hunting season in Virginia, making deer hunting illegal from January to August. To what extent these laws curbed the over-harvesting of deer is uncertain.<sup>75</sup>

This cycle repeated itself as English colonists continued to move westward. By 1738, the Piedmont counties were experiencing the same problems that their eastern counterparts had dealt with thirty years earlier. According to another conservation law passed in 1738, deer populations were dwindling in the Piedmont, mostly because of unscrupulous traders, roaming dogs, and fire hunting. The traders caused problems both for deer and for domestic stock, because they killed deer

merely for the sake of their skins, whilst they are feeding on the moss growing on the rocks in rivers, leaving the flesh to rot; whereby wolves, and other noxious beasts, are brought down among the stocks of cattle, hogs, and sheep, of the upper inhabitants, to their great annoyance and damage.

Dogs (and, although unmentioned, wolves as well) were also "destructive to the breed of deer, by killing not only the does, while they are big with young, but also the fawn after they are fallen." The final problem, the practice of fire hunting, was not only injurious to the deer, but also to cattle. The law states, "it is also found, by experience, that the making of large circles, and setting the same on fire, round coverts where the deer usually lodge, commonly called fire-hunting, is not only destructive to the breed of deer, but also to the young timber, and food of the cattle." To remedy these "mischiefes," the Assembly

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<sup>74</sup> Robert Beverley, *The History of Virginia in Four Parts*, 2nd ed. (London, 1722), reprint (Richmond: J.W. Randolph, 1855), 126.

<sup>75</sup> William Waller Hening, *The Statutes at Large*, 3:180, 462.

established a hunting season, required all dogs to be restrained, outlawed fire-hunting, and raised the penalties for these offenses. Interestingly, the seasonal restriction did not apply to deer killed while in a fenced grain field, or to people "living, or being upon the frontiers of this colony, who shall kill deer for food, for the necessary subsistence of himself or family."<sup>76</sup>

Despite these attempts at regulation, the deer population clearly could not sustain hunting pressure from both wolves and humans. This put wolves in a dire situation. The deficiency of wild food sources forced an increase in livestock depredations, which in turn caused increases in the number of wolf bounties. Although direct human predation could not have killed enough wolves to send the wolf populations into a landslide, the most serious effect of bounties was that they prevented wolf packs from settling around plantations where they could get plenty to eat. Dwindling wild food sources, the increasing rate of deforestation, and the unprecedented competition with humans all combined to force wolves into the less settled frontier regions, or onto plantations in search of domestic stock or discarded deer carcasses. The conflation of the wolves' available food supply and colonial plantation economics was the beginning of the end. There simply was not enough ecological room for wolves and humans to co-exist in the human-created ecosystem. Eventually, wolves' mortality rate would exceed their recruitment rate. Wolves that did not seek new hunting territories ultimately perished.

The regional climate may have also affected the wolves' ability to kill enough

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<sup>76</sup> *ibid.*, 5:60-61.

food. Climate is probably the most influential component in an ecosystem outside of human agency. One should not rule out the possibility that ecological factors independent of human activity may have contributed to wolf population declines. For example, tree ring data have shown that, although the predominant climate trend was wet and cool weather throughout the seventeenth and eighteenth centuries, there were also periods of severe droughts. The years 1606 to 1612, 1676 to 1679, and 1685 to 1688 were especially bad. Severe and prolonged droughts will have detrimental effects on all kinds of wildlife, and predator species will feel the effects as well.<sup>77</sup>

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<sup>77</sup> David W. Stahle, Malcolm K. Cleaveland, Dennis B. Blanton, et. al., "The Lost Colony and Jamestown Droughts," *Science* 280 (1998): 564-567; idem, "Drought as a Factor in the Jamestown Colony, 1607-1612," *Historical Archaeology* 34 (2000): 74-81; idem, "The Climate Factor in Late Prehistoric and Post-Contact Human Affairs," in Dennis B. Blanton and Julia A. King, eds., *Contact in Context* (Gainesville: University Press of Florida, 2004); Carville Earle, "Environment, Disease and Mortality in Early Virginia," in *The Chesapeake in the Seventeenth Century: Essays on Anglo-American Society*, ed. Thad W. Tate and David L. Ammerman (Chapel Hill: The University of North Carolina Press, 1979), 96-125; Philip L. Barbour, ed., *The Jamestown Voyages Under the First Charter, 1606-1609*, 150; Pennsylvania Game Commission, "Game Commission Offers Fall Food Condition Report," *News Release* #89-01 (15 October 2001). Internet, available from <[http://sites.state.pa.us/PA\\_Exec/PGC/newsroom/2001news/nr89-01.htm](http://sites.state.pa.us/PA_Exec/PGC/newsroom/2001news/nr89-01.htm)> [October 2003].

## CHAPTER IV: CONCLUSIONS

Colten and Dilsaver write, "If we step back and look at the broad panorama of human-environment interaction, two fundamental questions emerge: 1) how have human pursuits transformed the environment, and 2) how have human social organizations controlled their environment?"<sup>78</sup> The intent of this research was to create an intellectual laboratory for testing these broad themes in historical ecology. The resulting discussion has been a case study defying a deterministic view of the role ecology plays in cultural development. This thesis supports two sweeping points. First, humans are biotic factors of ecological change. A human population does not exist in an environment, but is a functioning part of it, engaged in direct or indirect reciprocal interactions with the other human, biotic, and abiotic parts.<sup>79</sup> Second, when thrust into a frontier ecosystem, European colonizers made deliberate attempts to re-create that ecosystem to best suit their entrenched settlement and subsistence practices. Colonists did not adapt to a frontier environment; rather, they endeavored to adapt the frontier environment to themselves.

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<sup>78</sup> Craig E. Colten and Lary M. Dilsaver, "Historical Geography of the Environment: A Preliminary Literature Review," 9.

<sup>79</sup> Joel D. Gunn, "Global Climate and Regional Biocultural Diversity," in *Historical Ecology: Cultural Knowledge and Changing Landscapes*, ed. Carole Crumley, 67; Craig E. Colten and Lary M. Dilsaver, "Historical Geography of the Environment: A Preliminary Literature Review," 1; Clarence R. Geier, et. al., "Cattle, Sheep and Whitetail Deer: Men, Mountains and Western Virginia. Final Statement of Cultural Resources in the Vepco, Bath County Pumped Storage Prospect Area." in *James Madison University Occasional Papers in Anthropology* 6, Vols. 1 and 3; Tim Ingold, "The Temporality of Landscape." *World Archaeology* 25 (October 1993): 152-154.

When given the means, the motive, and the technology, this is likely a fundamental aspect of human action when a new or changed environment confronts a particular culture.

In this conception, humans become both instigators and receptors of environmental change, integrated into a network of reciprocal feedback relationships. Because humans are but one component of a complex ecological system, they are subject to (but not strictly limited by) the constraints and influences of that ecological system, and are inseparable from their environmental contexts. Humans can initiate change and control ecological characteristics. Wildlife management, agriculture, irrigation, controlled burning, deforestation, hunting, fishing, mining, urbanization, national park creation, and the damming of rivers are all obvious examples of how humans actively and intentionally provoke ecological change. The point is that historical ecologists see humans as an integral part of an ecosystem's history, and an ecosystem's history as an integral part of cultural development. Cultural geographer D.W. Meinig writes, "life must be lived amidst that which was made before."<sup>80</sup> For anthropologists, it is ultimately the reciprocal relationships among the environmental components that are of interest, especially in the human sphere.

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<sup>80</sup> Neil L. Whitehead, "Ecological History and Historical Ecology: Diachronic Modeling versus Historical Explanation," 36. In the same volume, Brian Ferguson goes so far to suggest that "showing the history in ecology and the ecology in history," is the "proper task of historical ecology." Brian R. Ferguson, "Whatever Happened to the Stone Age?" *ibid.*, 288; Tim Ingold, quoted by William Balée in *Advances in Historical Ecology*, D.W. Meinig, ed., *The Interpretation of Ordinary Landscapes* (Oxford: Oxford University Press, 1979), 44.

The strength of this thesis lies not in the explication of coarsely defined ecological themes, however. After all, ecological change most often begins at the local level, and global generalizations do not always apply. In this more granular context, this thesis has brought to light many important ideas that have far reaching consequences for future ecological interpretations of Chesapeake history. First, wolves were a noticeable presence in the Chesapeake Bay ecosystem prior to colonization, but they were most prevalent west of the Fall line and north of Maryland where the habitat was optimal and deer were more readily available. Second, the presence of wolves had tangible cultural and ecological consequences for humans in the Chesapeake. Third, wolf populations increased decisively in the 1640s, after Europeans gained a stronger foothold and domestic livestock flourished. Fourth, because wolves filled an important ecological niche, their gradual destruction had significant cultural and ecological effects. Specifically, the marked increase in sheep husbandry at the end of the seventeenth century is linked to the extirpation of wolves from specific areas. Finally, the extirpation of wolves was slow and sporadic, occurring regionally in bursts, and caused by a variety of ecological factors. A lack of wild food, the expansion of English settlement, climate change, and bounty hunting were the most probable culprits.

Most historical ecologists agree that environmental crises are not uniquely the responsibility of human beings, and the romantic myth of a primeval wilderness free from significant human impact is exactly that—a myth.<sup>81</sup> The commonly held perception that,

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<sup>81</sup> Neil Roberts, *The Holocene*, 247-251.

as soon as the first European boat hit the beach, English adventurers began hacking a meager living from the American wilderness, using nothing but their own ingenuity and a judicious application of Indian lore, makes for a fantastic story but poor history.

All humans in the Chesapeake Bay watershed, both before and after European colonization, went to considerable effort to exploit and control the physical world around them in ways that would best suit their social, cultural, economic, and biological requirements at the time. How humans defined these requirements was relative. In a general sense, to the sixteenth, seventeenth, and eighteenth century European mind, a properly controlled ecosystem was one that facilitated the social, intellectual, and economic growth and improvement of human civilization. Reverence for a reified "Nature" by virtue of its own intrinsic aesthetic qualities did not trickle into the common mindset until much later, although reverence for the environment as a bewilderingly complex product of God's creative plan was quite prevalent. The so-called "Puritan work ethic," the Old Testament requirement that mankind holds dominion over nature, and the idea that the only useful environment was a productive environment, tempered any sense of impractical reverence with a sense of purpose (divine or otherwise) and an ideological dictum for environmental control.

With typical twenty-first century arrogance, modern observers often condemn these past ideas as short-sighted, narrow-minded, uncompassionate, or morally abhorrent, to make a moral statement or achieve a political goal. Such a judgmental view of history serves little purpose other than to clutter our interpretation of the past with modern biases.

The colonists' attitude toward the environment is directly reflected in their hunting activities, as the Europeans imported their time-tested subsistence strategies and their deep-seated hunting traditions to the New World ecosystem. In their attempt to master the New World, the English imported their hunting traditions, and these traditions evolved in the Chesapeake landscape more than many other aspects of European culture. This evolution took place so rapidly because of the prolonged lack of an urban center and market distribution system, the wilderness experience, and the Indian trade.

Subsistence hunting was unknown on most English plantations, just as in Europe. It was impractical, and the English elite viewed a reliance on wild food as base and uncivilized. The colonists' reliance on livestock forced them to make the New World more hospitable to their familiar style of subsistence, a style wholly foreign to the local ecosystem. Making the environment more hospitable meant removing the predators. This statement illuminates the answers to several keystone questions in historical ecology, as described by William Cronon. Cronon suggests that historical ecology (or environmental history, as he terms it) is a useful method for discovering what people care most about in the world they inhabit, how the Earth responds to their actions and desires, what sort of communities people, plants, and animals create together, and how people struggle with each other for control of the Earth, its creatures, and its meanings.<sup>82</sup>

This thesis has confronted these questions head-on. Both the English and Native Americans cared most about surviving in the colonial situation—the choices both groups

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<sup>82</sup> William Cronon, "A Place for Stories: Nature, History, and Narrative," *The Journal of American History* 78:4 (March 1992), 1376.

made to accomplish this goal depended on a variety of things as they engaged in a social, cultural, economic, and ecological tug of war. Both groups only understood one way to live—their way—and both struggled to accommodate their way in the face of new colonial challenges. The Natives were not passive victims of an English juggernaut. At varying times Natives openly resisted the invasion of European culture, tried to incorporate it into their daily lives, or used some parts to their own benefit. They were shrewd negotiators, and every tribe acted independently to best secure their own interests, as they perceived them. At the same time, the English had to transplant their lifeways into an ecosystem that never before accommodated such demands. Predator management is a microcosmic example of how the cultural and ecological transformations played out.

The presence of wolves in the Chesapeake Bay ecosystem had significant effects on the people who lived there. Prior to colonization, wolves were a symbolic force for some Native tribes, and likely served as a clan totem, especially for the Iroquoian and Siouan tribes to the North, South, and West of the Virginia Tidewater. Wolves may have even had some spiritual, religious, or magical significance, as suggested by the association of wolf tooth beads with a confirmed shaman burial in western Virginia.<sup>83</sup>

The expulsion of wolves from the British mainland in the sixteenth century laid the foundation for a perceptible shift in how Englishmen viewed the wolf. Most folks in England came to believe that wolves and humans could not co-exist in a civilized society. The Englishmen who entered the waters of the Chesapeake Bay and constructed a distant,

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<sup>83</sup> Michael Barber, "The Late Woodland Dan River People: A Social Reconstruction Based on the Study of Bone Tools at a Regional Scale" (Ph.D. Diss., University of Virginia, 2003).

back-water outpost of the British Empire carried these sentiments with them across the ocean. However, despite the wild and uncivilized character of the world beyond the Jamestown palisades, decades would pass before the English would act upon their predispositions.

Anthropologist James Moore writes, "When two societies are thrown against each other, we learn from the results of the collision what was required for the reproduction of those societies." Moore was referring to social relationships when he made this statement, but his words could just as easily apply to ecological ones. In the context of this thesis, it is evident that for the colonists to reproduce the world they knew and understood in North America, certain environmental characteristics had to change. The Chesapeake landscape was in no way "European," and for it to become "European," colonists had to organize their physical world in a way that would facilitate the transformation. Colonists had to clear fields, build plantation houses and out buildings, transplant domestic animals and European gardens, plant orchards, construct mills, dams, and fences, and remove anything that would impede these endeavors. In short, the New World had to be "civilized" if the English mercantile adventure would succeed. The savage wilderness, and the organic symbols of it, had to be pushed to the margins. The indigenous inhabitants—both human and otherwise—were the unfortunate casualties.

Some of the more extreme colonial perceptions created a world in which the indigenous humans and the local wildlife were two sides of the same coin. Governor Spotswood once described the Native people as "more like Wild Beasts than men." In 1703, a prominent Puritan in Massachusetts wrote that the Indians "act like wolves and

are to be dealt with as wolves," demonstrating a deep contempt for the "non-civilized" American landscape.<sup>84</sup>

How Europeans perceived and understood predators in the Chesapeake and how predators survived in an increasingly Anglicized environment was a direct outgrowth of the colonists' domestic traditions and subsistence requirements. Until the economic consequences of livestock depredations forced action, most colonists (especially the lower and middle classes) in the Chesapeake were content to leave the wolves to their own devices, no matter how uneasy they felt when they heard the occasional midnight howls of wolves on the prowl.

During the 1630s, almost three decades after the Virginia Company's initial settlement, and ten years after the first Powhatan massacre, colonial governments instituted predator management programs to re-create the New World environment, conform it to their agricultural practices, and satisfy their civilized inclinations.

Economics motivated bounty hunting more than an innate hatred or fear. True, listening to a pack of wolves howling in the woods around plantations was likely a disconcerting peculiarity of the New World environment, but it was the destruction of livestock that

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<sup>84</sup> James A. Moore, "Forager/Farmer Interactions: Information, Social Organization, and the Frontier," in *The Archaeology of Frontiers and Boundaries*, ed. Stanton W. Green and Stephen M. Perlman (Orlando: Academic Press, 1985); Alexander Spotswood to the Council of Trade, 15 October 1711, in *The official letters of Alexander Spotswood, lieutenant-governor of the colony of Virginia, 1710-1722, now first printed from the manuscript in the collections of the Virginia historical society, with an introduction and notes by R. A. Brock* (Richmond: The Society, 1882-1885); Solomon Stoddard to Joseph Dudley, 22 October 1703, quoted in Adam J. Hirsch, "The Collision of Military Cultures in Seventeenth Century New England," *Journal of American History* 74 (March 1988): 1208.

drove colonists to actively pursue the troublesome canid. Without livestock, there could be no "civilization." Without "civilization," the colonial experiment was doomed to fail.

Still, the fact remains that prior to colonization, wolves were present in the Chesapeake Bay watershed, and by the nineteenth century they were not, and bounty hunting did play a role in their extirpation. The question is, how much of a role? The conclusion is that bounty hunting was a significant factor, but not the only one. Even with the use of traps and pits, bounty hunting was simply too inefficient to curb wolf populations. Even in the twenty-first century, with sophisticated firearms and hunting equipment, "opportunistic shooting usually falls well short of removing the numbers of animals necessary to effectively curtail [predator] populations." Effective predator control "takes more than a superficial effort that simply skims off the easy ones."<sup>85</sup>

Bounty hunting varied regionally and temporally. It did not begin until the 1630s, but hunters actively seeking wolves for bounties were rare at that time. After the defeat of the Powhatans and the treaty with Necotowance in 1646, English settlement quickly expanded. Livestock increased prodigiously, and the number of wolves began to slowly rise. With Native Americans in the Tidewater effectively subjugated, the colonial government focused on removing their other savage nemesis from Tidewater forests: wolves. The number of annual bounty claims still remained low, however, for several more decades. Then, in the 1690s, the number of bounty hunters and bounty claims exploded when western lands opened for settlement, the southern Indian trade flourished,

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<sup>85</sup> Ben H. Kocorth, "Are Predators Hurting Your Deer Herd?" *North American Whitetail* 21 (January 2002): 31.

the number of livestock (especially sheep) was increasing, and climate was unfavorable to wolf feeding habits. Coinciding with the increase in bounty rewards is a general decrease in the amount of available wild prey, as the pressures of human settlement, the deerskin trade, and the increase in wolf populations caused deer populations to gradually diminish. This cycle began anew in the 1720s, after Virginians moved their settlements even farther inland, and the number of bounties achieved unprecedented levels. More bounties, plus less prey, equaled wolf extirpation.

By the 1730s, wolf hunting was an entrenched institution and more colonists participated in the bounty system than ever before. At the same time, the tide of English settlement reached farther into the backcountry, into the Blue Ridge foothills and the Shenandoah Valley. Even in southern Virginia, an area of historically thin English settlement, English plantations and cattle ranges increased prodigiously. Between 1721 and 1735, Virginia created six new counties to accommodate the increased population, all of which extended west of the fall line or south of the James River. English domination of the Tidewater was nearly complete, and the frontier fringe pushed to the south and west. The wolves' future extirpation was inevitable.

The extirpation of wolves had both ecological and cultural consequences. Any forest ecosystem will feel the effects of a decreased number of wild predators. When a woodland ecosystem experiences a noticeable drop in the number of wild predators, other animal populations will change as a result. Other predators, such as bears, bobcats, foxes, and raccoons, will often increase, and the populations of smaller animals—rodents, rabbits, birds, waterfowl, fish, and mussels—suffer significant decreases.

The cultural effects of wolf extirpation were equally penetrating. For the European colonists, the extirpation of wolves and other predators was the final step in civilizing an untamed landscape. The annihilation of the regional wolf population also paved the way for a growth in shepherding and improvements in animal husbandry. It is no surprise that, when the number of bounties sharply increased at the end of the seventeenth century, so did the number of sheep appearing in colonial probate inventories. Sheep were a valuable local product. Without troublesome wolves, the local establishment of sheep husbandry allowed for cheaper manufacture of woolen goods, and provided a nice variety of meat to the kitchens of the colonial gentry. As late as 1818, one Virginia patriarch, John Taylor of Caroline, called sheep "a luxury for the table," a sentiment which was surely shared throughout the Chesapeake colonies.<sup>86</sup>

While there is an obvious correlation between the numbers of sheep in Virginia and the increased number of bounties, I do not mean to over-simplify the issue. Clearly, there were complex forces at work. The data presented here refutes the interpretation that colonists did not introduce sheep until wolves were eliminated; rather, colonists did not mount a concerted effort to eliminate wolves until wolf depredations became intolerable. Wolf depredations became intolerable when the colonists' demand for locally-produced wool and mutton surpassed their tolerance of wolf depredations. In other words, wolf hunting was a response to a perceived need, rather than an outright slaughter for its own sake. During the early years of colonization, wolves certainly preyed upon colonial pigs,

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<sup>86</sup> John Taylor of Caroline, *Arator: Being a Series of Agricultural Essays, Practical and Political, In Sixty-Four Numbers*, ed. M.E. Bradford (Indianapolis: Liberty Fund, 1977), 249.

cattle, and horses prior to the introduction of sheep, but colonists endured these early depredations for several reasons. First, these species were less vulnerable to wolves, and depredations were less frequent. Wolves generally would only kill the very young, injured, or sick cattle, horses, and pigs, whereas even adult sheep were easy prey. Second, ranging too far beyond ones own palisades was a dangerous proposition prior to the 1640s.

When these circumstances began to change, so, too, did the colonists' wolf-killing inclinations. The frontiers became more secure, wolf populations had increased, and attempts at successful sheep husbandry began in earnest. The consequence was a focused effort to eliminate one of the more enduring vestiges of frontier wildness: the Chesapeake wolves.

Despite this thesis' intense focus on the non-human world of the Chesapeake Bay, one should not lose sight of the human element. The species that suffered the most during the colonial era was not *Castor canadensis*, *Odocoileus virginianus*, or even *Canis lupus*—it was *Homo sapiens*. In 1722, Robert Beverley wrote in the second edition of his famous history, that the "Indians of Virginia are almost wasted . . . All of which together can't raise five hundred fighting men. They live poorly, and in much fear of the neighboring Indians." The Eastern Shore Natives were but a fraction of former populations. The Wyanoke in Prince George's County were "almost entirely wasted," and had gone to live with other tribes. The Appamattox lived in "col. Byrd's pasture," and were not above seven families. The Susquehanna to the north had been weakened and dispersed since the 1670s. The only Tidewater region that still had a significant Native

presence was the south side of the James River. The Iroquoian-speaking Nottoways were thriving, and the Nansemond were stable at the time Beverley was writing, but less than twenty-five years later, they, too, were declining. In 1744, the Nottoway Nation was "of late reduced, by sickness, and other casualties, to a very small number, and among those that remain, many are old, and unable to labor or hunt." The Nansemonds were "likewise so reduced to a small number of men, that they cannot possibly subsist of themselves by hunting, which is their chief support."<sup>87</sup> All across Virginia, disease, famine, and warfare had extirpated Native Americans almost entirely. The wolves, it seems, were doing fairly well by comparison.

After reading the extant historical documents, one gets the impression that wolves and wolf hunting were one of those common pieces of history that never received much press, but that was on everyone's mind as an entrenched, identifiable part of colonial culture. Wolves were a defining component of how Europeans viewed the New World wilderness. Different people engaged in wolf hunting for different reasons (if they did so at all), but it was an activity in which humans from all social and ethnic groups participated.

Like Brian Ferguson, I believe that "the non-human environment plays a major role in shaping the contours of culture." However, "environmental mutability itself has limits, and for any people at any point in time, the environment is a reality that constrains

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<sup>87</sup> William Waller Hening. *The Statutes at Large*, 5:270.

in multiple and highly specific ways what people do."<sup>88</sup> Still, as active components of a larger ecosystem, humans do alter their environment to suit their interests. As anthropologist Anne Yentch writes, "The world exists for people as they perceive it; perception is informed by cultural precedent, enculturation, and contemporary observation."<sup>89</sup> The New World ecosystem was not cut to fit the die-cast mold of the European world view. For Europeans to comfortably profit from colonial settlement, they first had to successfully import the cultural, social, political, religious, and domestic institutions to adapt to altered circumstances.

Essentially, that meant that Europeans interacted with the Chesapeake ecosystem the only way they new how—as Europeans—and their interests could be most efficiently realized by remaking the New World in England's image as best they could. Most Englishmen, especially the educated elite, took pains to institute and preserve Old World culture in an environment that was not always conducive to doing so. One consequence, as Helen Wheatley notes, was that "ecological change went hand in hand with changes in systems of land and resource use."<sup>90</sup> In the case of sheep husbandry, changes in systems of land and resource use went hand in hand with ecological change.

Human agency, then, had significant ecological consequences in the Chesapeake, both before and after colonization. In making this statement, I disagree with Raymond

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<sup>88</sup> Brian R. Ferguson, "Whatever Happened to the Stone Age?" in *Advances in Historical Ecology*, ed. William Balée, 287.

<sup>89</sup> Anne E. Yentch, *A Chesapeake Family and Their Slaves*, 90.

<sup>90</sup> Helen Wheatley, ed., *Agriculture, Resource Exploitation and Environmental Change, An Expanding World Series*, vol. 17 (Brookfield, VT: Variorum, 1997.), xvii.

Dasmann, who wrote the following:

The balance between human populations and the resources of their environment is not maintained through conscious decision or overall awareness on the part of individuals. Rather, an intricate pattern of behavior, strongly reinforced by religious belief and social pressure, governs the relationship with nature for the individual, without he or she having a conscious knowledge of why a particular action at a particular time is required or forbidden.<sup>91</sup>

While the strong influence of social pressure and religious belief certainly was present in the Chesapeake, robbing the individuals of conscious agency would be a colossal mistake. The humans in the Chesapeake did make deliberate choices regarding their needs and the challenges their environment placed in front of them. Their efforts to destroy some wildlife species while preserving others focuses those choices with remarkable clarity.

"If environmental history is successful in its project," William Cronon writes, "the story of how different peoples have lived in and used the natural world will become one of the most basic and fundamental narratives in all of history, without which no understanding of the past could be complete."<sup>92</sup> To this end, this thesis has tried to portray human activities in the Chesapeake as a functioning part of a diverse ecosystem, one with its own peculiar history and web of relationships. In the broader themes of anthropological discourse, this thesis cogently demonstrates how all human societies—even technologically advanced ones—operate within the physical limits of an ecological system, and their success depends on how well they understand that system and how well

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<sup>91</sup> Raymond F. Dasmann, "Toward a Biosphere Consciousness," in *The Ends of the Earth: Perspectives on Modern Environmental History*, ed. Donald Worster.

<sup>92</sup> William Cronon, "A Place for Stories: Nature, History, and Narrative," 1375.

they either change it, adjust to it, or make it work for them. When a society's social, cultural, or economic institutions cannot work efficiently within the existing system, the society has to manipulate that system to improve its success. In the colonial Chesapeake Bay, this was the case prior to colonization, with the rampant use of fire, and after colonization, with the destruction of wolves and other predators. Depending on a modern observer's own impulses, these ecologically-focused activities appear as either creative adaptations to an environment, or as frustrated attempts to correct a maladaptive failure. Either way, the results were still the same in the colonial Chesapeake, and wild wolves have not been within the modern bounds of Virginia in over a century.

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## VITA

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Samuel Taylor Elswick was born in Lancaster, Pennsylvania on 25 January 1975. He lived in Texas and Tennessee during most of his childhood, and has lived in Virginia since 1990. In 1997, Samuel Elswick earned his B.A. at James Madison University with a degree in English and History and a concentration in Technical Writing. Samuel also completed coursework and fieldwork in historical archaeology, through the Department of Sociology and Anthropology. The author presented a research paper at the 1997 Phi Alpha Theta National Honor Society Virginia Regional Conference, and published two additional research papers: one in the *Madison Journal of Undergraduate Research* (1997), and the other in cooperation with the USDA Forest Service and the JMU Department of Sociology and Anthropology (1998).

In 2000, after working for two years as a technical writing consultant in Richmond, Virginia, Samuel Elswick pursued his graduate studies in Anthropology at the College of William and Mary. He completed archaeology field work in Bermuda. As a research consultant for the Colonial Williamsburg Foundation Department of Archaeological Research, Samuel authored another research report entitled *A History of Samuel Mathews and his Plantation, Warwick County, Virginia, ca. 1619-1660* in 2001. The author defended the present thesis in May 2005, and currently works for a software company in Virginia.