6-25-2010

Constructing, Consuming, and Complicating the Human-Nature Binary: Communication Practices in Forest Environmental Education

Elizabeth Dickinson

Elizabeth A. Dickinson
Candidate

Communication and Journalism
Department

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Karen A. Foss — Karen Foss , Chairperson

Janice Schuetz — Janice Schuetz

Karma Chavez

Alyosha Goldstein

Tema Milstein

CONSTRUCTING, CONSUMING, AND COMPLICATING THE HUMAN-NATURE BINARY: COMMUNICATION PRACTICES IN FOREST ENVIRONMENTAL EDUCATION

BY

ELIZABETH A. DICKINSON

B.A., Communication Studies, California State University,
San Bernardino, 1996
M.A., Communication Studies, New Mexico State University, 1998

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
Communication

The University of New Mexico
Albuquerque, New Mexico

May, 2010

DEDICATION

This project is dedicated to my two inspirations over the last year and a half—my young precious niece, Audrey K. Dickinson, and the beautiful forests with whom I spent so much time. May you flourish and guide us through our challenging and ever-changing human ways.

ACKNOWLEDGMENTS

I am grateful and indebted to those who made this project a great joy. This experience was significant due to the relationships I forged, with people and nature alike. In keeping with a theme in this project, I use the "parts of a tree" as a metaphor to recognize the individuals who made my journey memorable.

My Trunk: Members of the North Carolina Educational State Forest System. The trunk supports a tree and gives it shape and strength. I am thankful to the amazing people I met in the North Carolina Educational State Forest system. While I cannot name them, I am indebted to forestry personnel for their support and assistance. As true practitioners of pedagogy, they embraced me with open arms and I was humbled by their dedication to my project. Thank you in particular to one forest supervisor who granted me access, provided me with support, and shaped this project along the way.

My Roots: Dr. Karen Foss, Advisor. My relationship with Dr. Foss has been one of the most important of my life. Roots give a tree not only its nutrients, but tiny root hairs offer a vehicle by which a tree absorbs food and is anchored in place. Dr. Foss guided me through a constructive project; she remained positive, corrected my mistakes, and offered invaluable guidance. Beyond this project, Dr. Foss mentored me in ways that have forever changed me, and for this, I am grateful.

My Bark: Dr. Tema Milstein, Committee Member. The inner bark shuttles necessary food down a tree, while the outer bark protects it. As my primary resource in environmental communication, Dr. Milstein's nourishment gave this project and my studies depth and nuance, and her constant advocacy provided me shelter and inspiration. I thank Dr. Milstein for coming to UNM and for her wisdom, grace, and guidance.

My Heartwood: Dr. Jan Schuetz, Committee Member. The heartwood provides inner structural support and gives a tree its strength. Throughout my studies at UNM, Dr. Schuetz guided me in a way that has theoretically grounded me in Communication Studies. I thank Jan for her direction and support over the past four years.

My Cambium: Dr. Karma Chávez, Committee Member. The cambium is a layer of tissue that adds growth. I thank Dr. Chávez for theoretically positioning me within larger conversations and reminding me to visualize where I want to go.

My Crown: Friends and Colleagues at UNM. Comprising the leaves and branches at the top of a tree, a crown filters the air, offers shade, provides energy, and is joyful to watch. Marianne Leonardi, Iliana Rucker, Audrey Riffenburgh, Carrie Niesen, Willow Jackson-Anderson, Yea Wen Chen, Sachi Sekimoto, Claudia Anguiano, and so many others—thank you for sheltering me with energy, happiness, community, courage, and laughter. I am grateful to the department for offering me a place to thrive, and I especially thank Dr. John Oetzel and Dr. Pamela Lutgen-Sandvik. Last, I thank Dr. Alyosha Goldstein in American Studies for offering theoretical depth to this project.

The Ground: My Family. The earth provides a tree with an anchor, rooting it in an origin, time, and place. I thank my beautiful brothers, Robert, Douglas, and Andrew, for grounding me wherever I am and encouraging me. I thank my Uncle Dwight, Aunt Chris, and sister-in-law Lara for being in my life and my grandmother Isabelle for her sweetness. I thank my mother Diane for encouraging me to pursue my PhD.

My Forest: Jonathan B. Hill. I save the most important for last. A forest is life, a home where everything coalesces, and a space where one feels alive, content, connected, and in place. As my sweetheart, philosophical savant, comedic companion, and

conversational partner, Jonathan gave this journey significance and meaning beyond what words can express. Jonathan, I have always admired your contemplativeness and co-presence, both in nature and with me. Thank you for joining me on this journey.

CONSTRUCTING, CONSUMING, AND COMPLICATING THE HUMAN-NATURE BINARY: COMMUNICATION PRACTICES IN FOREST ENVIRONMENTAL EDUCATION

BY

ELIZABETH A. DICKINSON

ABSTRACT OF DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
Communication

The University of New Mexico
Albuquerque, New Mexico

April 2010

CONSTRUCTING, CONSUMING, AND COMPLICATING THE HUMAN-NATURE BINARY: COMMUNICATION PRACTICES IN FOREST ENVIRONMENTAL EDUCATION

by

Elizabeth A. Dickinson

B.A., Communication Studies, California State University, San Bernardino, 1996

M.A., Communication Studies, New Mexico State University, 1998

Ph.D., Communication, University of New Mexico, 2010

ABSTRACT

This project combines interdisciplinary conversations within the field of communication to examine environmental meaning systems and communication practices in the context of forest environmental education. Due to concerns over children's environmental alienation, there has been a continued push toward place-based environmental education. One such venture is the North Carolina Educational State Forest system (NCESF), where educators bring K-12 students into forests to help them reconnect with nature, expand environmental knowledge, and tackle what has been recently termed "nature-deficit disorder." When students visit the sites, rangers deliver structured lessons on ecosystems and forest management to children and chaperones—lessons that must adhere to the state's science curriculum.

I used interpretive and critical qualitative approaches to conduct a five-month study of communication practices in the NCESF system. As a participant observer, I paid attention to rangers' daily practices and the spatial layout of the forests and trails, including a number of "talking-tree trails" throughout the sites. As an observer, I watched

rangers teach lessons to students on one site. Additionally, I conducted in-depth interviews with forestry personnel and analyzed texts and artifacts, such as curricula, teaching materials, forestry literature, and photographs that I took.

Situated within four extant bodies of literature—socially constructing nature, environmental communication, consumer and commercial appropriations of nature, and environmental education—my purpose in this study is threefold. First, I examine how rangers, teachers, forestry, and curricula conceptualize, construct, and frame nature and the role of humans in it. Next, I investigated how people, parties, and nature resist and complicate dominant framings. Last, I explored the possible intersections and implications of what is being constructed, produced, and performed about human-nature relations in the forest sites. This study is further contextualized within larger cultural and educational practices to expand environmental communication research, reexamine forest environmental education, and retheorize nature-deficit disorder.

This study's findings point to three analyses and corresponding theses that rearticulate human-nature relations. First, in the forest sites, people and parties frame nature as tightly organized and contained—as scientific, named, managed, gendered, a physical place, disciplined, competitive, different, and ocularcentric. These framings maintain a traditional nature-culture binary that promotes what I call a *get close-stay away* dialectic, sending children the message to get close enough to trees to advocate for them, but far enough away to be comfortable with cutting them down and using them.

Second, people and parties frame nature as produced for human use, where trees exist in abundance and are central to commerce. This framing points to a *production-consumption* context and cycle that reproduces consumer relationships with nature and

necessitates the production of trees. Third, humans and nature alike challenge dominant framings through subtle acts of resistance and autonomy, through expressions of awe and wonder, and in adults' stories of "when I was young." I conceptualize these resistances as *interrupted boundaries*, which disrupt and complicate the human-nature binary.

I then use the three theses to retheorize and rediagnose nature-deficit disorder, pointing instead to schizophrenic-like relations that contribute to human-nature alienation. Nature-deficit disorder and my research site position the cause of environmental problems as decreased exposure to the outdoors and advocate for children to go back to nature as a solution. This move sidesteps important issues that contribute to environmental estrangement among adults and children. Incorporating ecopsychology and the environmental communication concept of "mediation," I argue that the metaphor of schizophrenia allows environmental degradation and environmental education to be conceptualized and addressed differently and enables the nature-culture binary itself to be consumed. I end with a number of future directions for environmental education practices that address the nature-culture split. Ultimately, this study adds to environmental communication research by retheorizing nature-deficit disorder and environmental education and envisions new ways of thinking about human-nature relations.

TABLE OF CONTENTS

LIST OF FIGURES……. xvi

CHAPTER ONE: INTRODUCTION…… 1

Rationale and Background……..……..…..……..... 2

Environmental Immediacy……...…….. 3

Dualistic Thinking and Human-Nature Binaries…….... 7

Youth and Nature…….…….....10

Nature-Deficit Disorder..... 13

Research Site and Context……... 16

The North Carolina Educational State Forest System……..... 17

State and Local Agencies..... 21

Federal Forestry..... 23

Research Questions…….……..……..…….....25

Research Questions……. ……..…….....25

Researcher Perspective……. ……..…….....27

An Interpretive Approach…..…….....27

A Critical Approach……..……28

Preview of Chapters…….30

CHAPTER TWO: LITERATURE REVIEW……... 33

Socially Constructing Nature……..……..... 33

Construction Arguments……..……..…… 33

Construction Processes and Outcomes..……..... 37

Scientific Constructions…..…….……...…….... 43

Political Constructions…..…….……...…….…… 47

Communication and Nature-Human Relations……..... 49

Overview and Approaches……..……..……50

Mediating Nature-Human Relations ……..……..……. 54

Environmental Communication Studies Informing this Project……... 56

Consumer and Commercial Appropriations of Nature….....58

Public and Commercial Intersectionality……... 62

Environmental Education……... 63

Environmental Education Legislation…...…….……63

Environmental Education Research…...…….……... 65

CHAPTER THREE: METHODS.....70

Data Collection Methodology……..……... 70

Observation of Lessons.……..……70

Participant Observation of the Sites …….…… 71

Collection of Interviews…….....…..…….72

Collection of Texts and Artifacts……..……...…….. 74

The Use of Fieldnotes…….....74

Description of the Data……76

Observations……...…….……..... 77

Participant Observations…….……..... 79

Talking Trails…….…….....80

Interviews and Artifacts…...……..……...…….. 83

Data Analyses…….. 84

CHAPTER FOUR: FINDINGS I: ORGANIZING AND CONFINING NATURE.....88

Scientific……..…….....91

Named and Identified…….…….....93

Managed…….……..... 99

Gendered……..107

A Physical Place……..…… 113

Disciplined…….…….....123

Disciplining Nature……....123

Disciplining Visitors…….…….....130

Competitive…….. 144

Different……... 149

Focused on Sight (Ocularcentric)……152

CHAPTER FIVE: FINDINGS II: PRODUCING AND USING NATURE…... 162

Abundant Producer……..162

*Exists for Human Us*e……..…… 163

Central to Industry……...170

CHAPTER SIX: FINDINGS III: RESISTING CONSTRUCTIONS……179

Performing Resistance and Autonomy…….179

Awe and Wonder…….....182

"When I Was Young"…….. 187

CHAPTER SEVEN: DISCUSSION AND CONCLUSIONS..... 192

Project Summary…….....193

Rearticulating the Human-Nature Binary: Three Theses ……...195

Thesis I: *Get Close-Stay Away* Dialectic: Constructing the Binary…….. 195

Get Close: "It's OK To Be a Tree Lover"……. 196

Stay Away: "Tree Cookies" and "Enemies"……..198

Thesis II: *Production-Consumption* Context and Cycle: Consuming Trees and Consumerism.....206

Promoting Producer-Consumer Relationships……...207

Public-Commercial Intersectionality……. 212

Thesis III: *Interrupting Boundaries*: Complicating the Binary……. 215

Rediagnosing Nature-Deficit Disorder……225

A Summary of Nature-Deficit Disorder…….……227

Merits to Nature-Deficit Disorder…….……....228

Critiquing Nature-Deficit Disorder…….……...229

A Rediagnosis: Schizophrenic-like Human-Nature Relations……...234

Consuming the Nature-Culture Binary…….. 246

Alternative Directions for Practice……..248

Reconceptualizing Forestry and Forest Environmental Education……249

Reconceptualizing Space and Time: Crossing "The Bridge to Nowhere"… 252

Behavioral, Cognitive, and Emotional Modifications……... 255

The Case of the Interrupting Bird……..……..... 262

Respeaking for/with Nature……..…… 263

Final Thoughts……...…….. 264

APPENDICES..... 266

Appendix A: Interview Guide……..266

Appendix B: Chart Summarizing Nature-Deficit Disorder and Schizophrenia Diagnoses ……268

REFERENCES.....270

LIST OF FIGURES

Figure Number Page

1. Map of North Carolina Educational State Forest Sites…… 18

2. Talking Trails: Trees, Rocks, and Mules……..... 81

3. Teaching Materials Used in Lessons ……...……..... 84

4. Nature as Organized and Contained…… 89

5: Forest Demonstration Trail…….. 101

6. Nature as Gendered……..110

7. Nature as a Physical Place to Go To…….....…….....116

8. Nature as a Physical Place to Go Through…….. 119

9. Site Trail Map……...……..... 122

10. Nature as a Sensory Experience……156

11. Producing and Using Nature: Tree Identification Signs……165

12. Commercial Sponsorship……..…….....175

13. The Objectified Partitioning of Nature…….. 202

14. Interrupted Boundaries: A “Crooked” Tree Performing Resistance …….223

15. “The Bridge to Nowhere”……...…….....254

CHAPTER ONE: INTRODUCTION

In the present age of "green" awareness and concern, where environmental issues permeate local, national, and global conversations, various entities in the United States are embarking on a variety of environmental education (EE) programs. One such venture—forest "place-based" EE—provides classes for children in outdoor "natural" settings, where forestry and schools combine forces to offer students hands-on experiences. Educators bring students into the forest educational sites to help them reconnect with nature, expand environmental knowledge and awareness, and tackle what has been termed "nature-deficit disorder" (NDD).[1]

One such forest EE program is the focus of this study—six outdoor state forest locales that make up the North Carolina Educational State Forest (NCESF) system. In these forests, trained rangers teach ecology and forest management classes to K-12 students who, along with their teachers and chaperones, are bused into the sites. In this context, forest rangers and teachers—operating from their own assumptions, beliefs, and training about environmental issues—take on a crucial role in shaping how young people come to understand environmental issues and nature-human relations.

In this study, I combine interdisciplinary conversations within the field of communication to examine forest- and place-based EE in the context of the NCESF. My objective is to investigate qualitatively how rangers, educators, the state forest service, and curricula frame nature on the sites. I explore what is being constructed about the

[1] "Nature-deficit disorder" will be discussed in length later in this chapter. Briefly, though, Louv (2005) introduced the term to describe the physiological, emotional, behavioral, and social problems that are said to stem from children spending less time outdoors. As a solution, Louv and others advocate returning children to nature.

nature-human intersection in this context and examine the cultural and contextual ideologies that contribute to these meaning systems.

This chapter is arranged as follows. First, I offer a rationale and background for this study. In this rationale, I position this project within urgent environmental issues that are contextualized by dualistic thinking and nature-human binaries. Environmental issues have implications for youth and nature, and these implications are popular discussed, such as in the recently coined NDD theory. Second, I provide an overview of the research sites and context, including the NCESF system, state agencies that govern it, and federal forestry ideologies that underpin state forestry. Next, I pose three research questions that guide the study. Fourth, I overview my research perspectives, notably the combined use of interpretive and critical approaches. I end with a preview of the project and chapters.

Rationale and Background

In this section, I begin with a discussion of environmental immediacy that illustrates the importance of this topic; a sense of urgency surrounds environmental issues, with wide reaching national and global implications. Next, I explore nature-human dualism and binaries that lies at the heart of many environmental perceptions and practices in the United States and elsewhere. Third, I discuss how environmental issues and dualistic ways of thinking about them have specific implications for youth. Last, I examine the recent NDD theory that calls for increased place- and science-based EE to address environmental issues. These four components combine to form a rationale for this project. In sum, as I will illustrate below, the urgency of environmental degradation, the dualistic thinking that characterizes nature-culture binaries, the importance of

environmental topics to young people, and the influence of the NDD movement on contemporary environmental thing makes this study valuable and timely.

Environmental Immediacy[2]

Researching human-nature topics is important because so much is at stake, for humans and nature alike. The profound impact humans are having on the Earth is difficult to dispute. Population growth is the most commonly attributed "cause" of environmental issues, but population arguments are notably problematic in how they often implicitly endorse eugenic politics.[3] Currently at approximately 6.4 billion inhabitants, the Earth's human population is expected to exceed 9 billion by the year 2050, with the highest increases often said to be taking place among developing and impoverished nations (The United Nations Population Fund, 2005), a notion that wealthier nations often problematize, frown upon, and seek to fix. Discussions of population increase are misleading and dangerous in how they work from the assumption that population growth is the "cause" of the problem. Essentially, pointing to population as the cause of environmental issues enables wealthier and more privileged nations (which typically have lower population rates) to conceive of the problem as existing elsewhere and as fixable by eugenics-like population control.

---

[2] Here, "immediacy" is not to be mistaken with the notion of "communication immediacy." Instead, I use "immediate" to mean present, pressing, imminent, looming, and urgent.

[3] Eugenics was a study and practice in the early 20th century, where people applied selective breeding practices to human beings. The goal was to "improve" the human gene pool by breeding out humans who were conceptualized as has having physical, mental, and intellectual flaws. While eugenics has overtly fallen out of favor due to its association with Nazi Germany, its politics remain embedded within some environmental ideology. For example, some recent scientific developments that seek to modify humans (such as selection techniques associated with reproduction) and nature imply eugenic lines of thought. I also raise eugenics here because of its frequent association with classic social Darwinism and the problematic ways in which people use scientific and eugenic frameworks to position environmental issues.

Conceiving of population as a dilemma began with Thomas Malthus, a British political economist and demographer in the late 1700s/early 1800s. Malthus's argument held that human population tends to grow exponentially while agricultural capacity grows arithmetically (Malthus, 1798). Malthus argued that human population demands eventually will exceed agricultural resource ability and lead to social change and misery—a notion now coined the "Malthusian catastrophe" or "Malthusian crisis" (Malthus, 1798). "Malthusian catastrophe" rhetoric is loaded with issues of power and politics, such as how Malthus normalized human poverty under a human "struggle-for-existence" argument. I bring up Malthusian economics here because it essentially held the poor responsible for their condition based on their bad morals and breeding habits, for example. Malthusianism is classic social Darwinism and relies on eugenicist thinking. I do not incorporate this approach in my argument, but I mention it here to point to the ways in which environmental issues ultimately are framed and the historical conversations on which they are often based.

When population growth is espoused as the cause of environmental degradation, it obscures other cultural, economic, and political systems, ideologies, and practices, and it profoundly influences cognition and behavior that continue to alter the Earth. Pollution, global warming, water shortages, and competition for natural resources not only are real but are also culturally produced and performed. In addition to scientific studies that document the materiality of environmental issues, qualitative case studies in settings are essential to uncover the ways in which cultural systems affect environmental issues and impact human-nature relationships.

Human consumption patterns, and the cultural beliefs that underlie them, are a primary source of environmental degradation. The United States excessively leads the world's consumption of natural resources with its power and wealth resting on an aggressive consumer economy and supported by deep-seated cultural beliefs. Currently, the United States makes up a mere 5% of the world's population. Yet, it is the world's top oil consumer and importer ("U.S. Energy Information Administration," 2008); emits more carbon dioxide than any other country, accounting for 23%of worldwide carbon emissions ("U.S. Department of Energy," 2006); consumes 26% of the world's energy ("Solar Energy International," 2006); consumes approximately 40% of the world's primary productivity (Manning, 2004, February); and uses a staggering amount of energy—approximately 15 times more per person than a typical developing country ("Solar Energy International," 2006). In sharp juxtaposition, approximately 2 billion world citizens, about 1/3 of the globe's human population, do not have regular access to electricity ("U.S. Department of Energy," 2006). As these statistics point out, the United States has disproportionately positioned itself politically and practically to reap and consume resources, and the processes and outcomes of this positionality is crucial in theorizing human-nature relationships.

Scholars can and should address not only how humans communicate about their profound impact on the natural world, but the ways in which communication also mediates these ideologies and practices. A recent conversation in environmental communication positions the sub-discipline as having a unique ability to speak to environmental issues (Cox, 2007). Carbaugh (1996) argues for the increasing need to examine more comprehensively sites that illustrate the intersection of nature and culture,

arguing that “specific case studies that trace the patterned use and interpretation of nature in communication and community are essential” (p. 54). Waddell (1998) also points to the need in environmental communication research for applied studies that simultaneously examine environmental and cultural issues. Most important, this kind of research can investigate possible avenues for change. Essentially, I have chosen a site-specific case study where educators take children into nature and communicate particular environmental beliefs. What students learn from rangers and educators in these forest sites is shaped and contextualized within larger cultural ideologies, economies, histories, and politics.

How humans make sense of and impact the natural world additionally influences how they perceive and act toward one another; that is, environmental beliefs and practices and how humans treat the natural world mediate human relationships. For example, when many U.S. Americans discuss gas prices, they often focus on topics like cost, financial burden, taxation, and access to oil. Yet, infrequently discussed is why many people in the United States live in ways that depend so heavily on the automobile and on fossil fuels and the often-isolating impact these practices have on human interaction. Environmental issues simultaneously matter to human-nature, human-human, and nature-nature relationships.

The notion that environmental beliefs and communication practices influence the natural world, impact human interactions within it, and adhere to constructions of cultural systems are evident within forests. As Kosek (2006) argues, forested spaces are not just contexts in which people communicate; they become active sites of the politics of nature and difference among humans. Incorporating Foucault’s treatment of governmentality,

Kosek proposes that many analyses "miss the *productive* aspects of power in the formation of nature, subjects, populations, and institutions" (p. 67, italics in original). Similarly, instead of just a physical setting in which communication occurs, an educationally designed forest becomes, in and of itself, a mediating cultural place that shapes, enacts, normalizes, and performs certain human relationships with nature. In this study, then, I do not conceptualize "nature" as a physical forest site, nor do I envision the forest as a location or backdrop. Rather, I investigate the productive practices that cultures, ideologies, and institutions play in shaping these artifacts or spaces and how individuals develop meaning systems and relationships in and with them.

Dualistic Thinking and Human-Nature Binaries

Cultural ideologies and practices profoundly shape how environmental issues are conceptualized. This case study points to dualistic thinking through several nature-culture binaries by exploring how many Western place-based EE discourses combine with science and politics to construct and frame nature and forests. Here, I articulate the dualistic thinking and nature-culture binaries that contextualize this study.

In many Western and modernist discourses, humans have largely pried themselves from nature and placed themselves in an elevated position over nature, a concept that determines how many people think about environmental issues. This thinking allows humans to perceive themselves as superior to the "Other" natural world and ultimately in control of it. Perceiving oneself as superior and having power over all else then normalizes exploitation and misuse.

My objective here is not to focus on the origins of human-nature dualism. Yet, completely discounting the possible sources of dualistic thinking can decontextualize

practices and obscure possible solutions. For this reason, I turn to the important question, which is not necessarily one of origin (where environmental ideologies come from) but of what humans do with them.[4]

Within largely Western ideological environmental constructions, human-nature dualism creates a number of binaries. Expanding on three such binaries—mastery versus harmony, othering versus connection, and exploitation versus idealism—Milstein (2009b) argues THAT "examinations of discourses often reveal multiple ideologies in tension—as dominant ideologies assert and reproduce themselves, so, too, do alternative ideologies resist and challenge dominant ways of thinking and doing" (p. 26).

A number of cultural systems and practices influence nature-culture binaries. Mediating dualistic conceptualizations of the natural world are influenced by language and discourse (Carbaugh, 2001; Jung, 2001; Muhlhausler & Peace, 2006; Schultz, 2001), science (Haraway, 1989, 2007), governance (Anderson, 1997a; Drayton, 2000; Huckle, 2008), and specific cultural practices, such as consumer habits (Baudrillard, 1998; Bauman, 2007; Dauvergne, 2008; Easterling, Miller, & Weinberger, 1995). For example, the very act of using the words *nature* and *human* point to the inherent complexity of using language to articulate human-nature intersections and relationships. This project stems from the assumption that, "All the terms of the eco-environment—ecology, biology, and nature suggest an absolute binary distinction between all that is human and

[4] There are a plethora of theories of how human-nature separation occurred. For example, one interesting theory that hypothesizes how humans and nature have separated is Shepard's (1982) notion of human "arrested development." Shepard argues that modern human-nature relations—which Shepard conceptualizes as a kind of "madness"—partly stems from the invention of agriculture and domestication 10,000 to 20,000 years ago, essentially causing an "ontogenetic crippling," or, the loss of developmental practices that once allowed humans to live in harmony with the natural environment. Shepard (1995) argues: "In the captivity and enslavement of plants and animals and the humanization of the landscape itself is the diminishment of the Other, against which people must define themselves, a diminishment revealing schizoid confusion in self-identity" (p. 37). I mention this theory as an example of some of the ways in which human-nature dualist thinking are conceptualized.

all that is not. The tenacity of the binary is tenacious" (Slack, 2008, p. 480). The word *environment* indeed illustrates the tendency to speak of nature as something outside of and separate from the human. Haraway (2007) further articulates the complexity of dualistic thinking and how humans and nature are intricately linked in the assertion that "nature and culture are bound up in knots" (p. 5), instead of being separate as they are commonly perceived.

Bullis (1996) and Plumwood (1997) note a central dilemma in discussing nature-culture binaries and hierarchy. Plumwood argues that when advancing notions of anti-anthropocentrism, scholars tend NOT to want to separate (nor conflate) nature and the human. Yet, the very discursive system that humans engage in makes it impossible not to include the human. The nature-culture binary is at the heart of much environmental communication and interdisciplinary research because it illustrates how it is possible that humans have made it to where they can construct nature. In detailing an ecofeminist position, Bullis notes that notions of difference are at the heart of the matter. Notions of culture and nature are constructed from the assumption that difference exists; difference then calls for a hierarchical arrangement of that difference, which then calls for control based on that hierarchy. Bullis (1996), Plumwood (1997), and Cronan (1996a) critique various environmentalist ideologies (such as deep and social ecology) as not only maintaining a nature-culture binary, but attempting to erase differences that matter by advancing a conflated "holistic" notion of nature.

While I argue there is a material natural world of which humans are a part, in this project I investigate the ways in which humans anthropocentrically have come to conceptualize "the environment" by separating it from humans, the binaries that are

created and maintained in the process, and the repercussions of this way of conceptualizing the world. Essentially, dominant dualistic thinking and discourses (and the binaries they create) mediate much environmental thinking in the United States.

Youth and Nature

This study is situated within popular and academic discussions surrounding youth and nature. For years, scholars have sought understanding of the link between children and nature. Carson (1965), Cobb (1977), and Kahn and Kellert (2002), to name a few, have argued, in various ways, that children's experiences with nature have profound effects on emotional, psychological, physical, and social development. Environmental degradation and how humans perceive it have specific implications for youth, who are said to be affected by these problems in unique ways (Hoffereth & Sandberg, 2001). For a number of reasons that are explored in this study, younger generations have less access and experience with "nature" and spend more time indoors or in controlled outdoor settings. While this may be the case, the issue can be talked about in a number of ways. Here, I point to current discussions centering on children and nature to provide a background of the issue and link its importance to this study.

Cultural, contextual, and institutional factors have contributed to a change in the way many U.S. American children spend time in the "natural" or outdoor spaces around them. One frequently cited reason (e.g., Louv, 2005; Malone, 2007) is that space in the United States is becoming more urbanized; with less outdoor access, people spend less time in "natural" or "open" spaces. This reason, along with a host of others, is said to be changing many childhood practices and perceptions of nature (Hoffereth & Sandberg, 2001; Louv, 2005; Malone, 2007). In turn, these perceptions profoundly influence how

children perceive and act toward their surroundings as adults. Yet, while the lives of youth differ from past generations, the way adults frequently talk about it illustrates dualistic thinking; that children do not go into natural spaces any more (because natural spaces are declining) highlights "natural" space as separate from human (indoor) places.

How children's relationships with their surroundings differ from past generations is articulated in a number of ways. Changing characteristics of how children are spending their time are molding new notions of childhood and the way youth relate to nature and space. For example, in one study, Hofferth and Sandberg (2001) found that children (ages 0-12) in the United States spend on average thirty minutes a week in outdoor free play activities (excluding sports and school-related events). Additionally, children's lives are becoming increasingly structured and sheltered. Calling today's children "the bubble-wrap generation," Malone (2007) points to some of the personal and social implications of decreased mobility and free environmental play among youth.

Malone (2007) cites a number of important factors that enable limited mobility and decreased free play among children. These factors include local and global increased climates of fear and anxiety ("stranger danger" and globalization of terrorism), increased technologies (cell phones, video games, and GPS tracking devices), changing structures of homes and neighborhoods ("McMansionland" houses with larger spaces on smaller lots, decreased sidewalks, more traffic, increasingly isolated suburban and urban neighborhoods), and the growing pressure some parents place on themselves to create active and structured lifestyles for their children. A number of parents also find themselves working multiple jobs with limited resources; concern for children's free play can be dwarfed in comparison to dire socio-economic conditions and lived realities.

These factors combine to create a new kind of childhood where children are more and more disconnected from outdoor settings, from free play with neighborhood children, and from exposure to other adults. Malone and others note the effects of this new era of isolated childhood on physiological, psychosocial, social, and cultural conditions and learning processes, including how children grow up to conceptualize the natural world.[5]

A number of practitioners point to the causes and cures of children's changing ways with nature. For example, Mitchell (2007) implicates the influence of technology and changing lifestyles on how children relate to nature: "Computers, video games, television, schools' emphasis on homework, a full after-school schedule of extracurricular activities, lack of access to natural areas . . . are isolating children from the natural world and the advantages of environmental education" (¶ 2).

To address the problem, advocates and coalitions are pushing for place-based and scientifically linked EE curriculum to provide students with experience in outdoor settings. Practitioners and scholars alike widely advocate the advantages of EE in expanding intellectual development; contributing to adult stewardship; and providing centering, calmness, and interconnectedness. Some proponents specifically advocate government-supported place-based education in park and forest settings and with a science curriculum, where children are encouraged to experience outdoor places while learning about natural science and ecology. In what are deemed "real" "environmental" sites, educators are given a crucial role in taking children back into nature to reconnect. A

[5] I saw firsthand an example of this notion of limited mobility and free play during a pilot visit to one educational state forest site in November 2009. When I observed approximately 30 children arrive at the site for their nature lessons, I noticed they immediately congregated to play on an approximately six-by-six foot concrete slab located near the bathroom. I found this interesting, especially since they were in a forest area where they could freely and openly run. When I asked about this behavior, a ranger indicated this was common, and the ranger also thought it was interesting.

rising body of research that is discussed in Chapter Two has begun to examine how children are learning to conceptualize nature in place-based EE contexts (e.g., Cook, 2008; Eames, Cowie, & Bolstad, 2008; Nuyen, 2008).

In sum, an urgency of environmental degradation in conjunction with how adults' perceive its effects on children has prompted theorizing about children and nature. One way to address this issue is to promote the connection between nature and children (Kahn & Kellert, 2002; Louv, 2005). Yet, these undertakings and the assumptions that underlie them can be shaped by dualistic thinking that separates nature and culture—a nature that children need to go back to. There is limited literature that critically examines both the widespread assumptions behind these educational projects and what actually happens when children visit these place-based sites. Critically examining these programs is important in order to point to particular causes and offer solutions to bridge the nature-child divide. Although such programs do get children "into nature," under what conditions this takes place and what happens when children are there are crucial issues explored this study.

Nature-Deficit Disorder

One recent interpretation of how adults perceive children's changing relationships with nature that forms a backdrop for this study is the theory of nature-deficit disorder. In the book, *Last Child in the Woods*, Louv (2005) introduced the term to describe the physiological, emotional, behavioral, and social problems that stem from children spending less time outdoors and in nature.[6] Working from the assumption that something

[6] While scholars have made similar arguments for some time (Carson, 1965; Hoffereth & Sandberg, 2001; Kahn, 2002; Malone, 2007), Louv brings his specific version of the message in a way that has resonated with popular audiences.

has gone terribly wrong since his own post-WWII childhood, Louv contends children are paying a price from living environmentally estranged lives. Decreased outdoor contact—that Louv contends is caused by parental fear and protectionism (and fueled by media), shrinking open spaces for play, environmental safeguarding, and technology—leads to dulled senses, behavioral difficulties, and decreased emotional and physical wellbeing. Louv argues:

> The cumulative impact of overdevelopment, multiplying park rules, well-meaning (and usually necessary) environmental regulations, building regulations, community covenants, and fear of litigation sends a chilling message to our children that their free-range play is unwelcome, that organized sports on manicured playing fields is the only officially sanctioned form of outdoor recreation. (p. 31)

Drawing on Wilson's (1984) biophilia argument,[7] Louv's solution is to use nature to heal children by increasing hands-on outdoor education. NDD has become widely discussed among educators, scholars, parents, legislators, and activists, and even is used to support the ongoing *No Child Left Inside Act*—a proposed federal overhaul of K-12 education that includes increased outdoor environmental and place-based activities.[8]

Louv further argues that practices found within ecopsychology can be used to heal children by increasing their hands-on outdoor education. In the revised edition, Louv notes that his book sparked a national and international movement that can be of value to educators, scholars, parents, legislators, and activists alike. NDD believers claim that

---

[7] The biophilia hypothesis asserts that humans have an innate, biologically driven instinct and affinity for nature (Wilson, 1984).

[8] The *No Child Left Inside Act of 2009* has an interesting history and is an important context in which this study takes place. A more detailed explanation can be found in Chapter Two.

governmentally supported programs give teachers and parents a means to get outdoors while also studying natural science, natural history, and ecology. Louv conceptualizes parks and forests as available resources for parents and teachers to tap into for help; eager to teach the public and increase the number of visitors to their sites, park and forest rangers happily oblige.[9]

NDD forms part of the rationale for this project for a number of reasons. Louv's diagnosis speaks to an important issue—that children are increasingly alienated from nature and outdoor unstructured activity. NDD is one recent popular way for advocates to define and address not only environmental issues, but how they affect children. NDD simultaneously illustrates and shapes how parents, educators, administrators, and others are conceptualizing environmental problems and what to do about them. As this study shows, advocates, teachers, and parents are quickly incorporating NDD into curricula and are in the process of shaping federal educational reform.

Yet, as this study illustrates, the fundamental notion of human-nature relations that is the foundation of NDD needs to be questioned. I argue that what is missing in NDD and in my research site is an examination of what environmental dualistic discourses, scientific approaches, and economic systems do and how, in the absence of multiple or alternative ways of seeing, these lenses encourage humans to perceive nature in an alienating way. Many Western environmental discourses are based on particular cultural assumptions that call for specific practices, namely in how they perceive entities in nature as separate from humans. Instead of offering a way out of this trap, through a nostalgic telling of a model childhood, Louv describes the symptoms without examining

[9] For example, in 2008, after the release of *Last Child in the Woods*, the Forest Service launched a national "Get Outdoors" campaign, which includes increased funding for a "More Kids in the Woods" program. The campaign was announced at a press conference during Super Bowl XLII festivities.

the fundamental issue. Louv's approach is a specific anthropocentric human construction, driven by and entrenched in Western institutional discourses and environmental narratives.

To summarize the rationale and background presented here, four primary issues contextualize this study: a) environmental immediacy; b) nature-culture dualism and binaries; c) youth and nature; and d) Environmental degradation—its urgency and its implications on both the social and natural worlds—is one of the most important issues of all time. Leading the pack in this degradation is the United States. Place-based EE in the United States, such as state forest programs similar to the one I examine, claim to be teaching children about pressing environmental issues. These issues, however, are shaped by and occur within deeply ingrained cultural contexts that are largely obscured in the pedagogy itself. Many environmental discourses, shaped by dualistic thinking, keep reinforcing nature and culture as binaries. Moreover, environmental issues and the way some humans think about them have specific implications on youth. One recent popular example is NDD, where supporters define the problem and solutions in ways that may further obscure or perpetuate dualistic thinking. Thus, the urgency of a degrading natural world, that many people in the United States conceptualize environmental problems as within a nature-culture binary, how these issues specifically affect children, and how the "last child in the woods" movement in particular addresses these issues make this case study valuable and necessary.

Research Site and Context

In this section, I first describe the setting of this project—six sites in the NCESF system. I overview the NCESF's role in educating students, how it is governed, the

physical layout of the sites, and other contextual issues. Second, I describe the overseer of the NCESF—the North Carolina Forest Service. Last, while the NCESF is not directly governed by the U.S. Forest Service, the federal agency was instrumental in shaping the system's early physical and ideological creation. These contexts and agencies significantly shape what eventually is taught at the NCESF sites.

The North Carolina Educational State Forest System

The NCESF system is managed by the state of North Carolina's Division of Forest Resources and the Department of Environmental and Natural Resources. NCESF's goal is to educate schoolchildren and the public on various issues of forest ecology and management. The system has become increasingly popular since its opening in 1976, and each year thousands of students are brought by their teachers to participate in EE classes.

A total of six ESF sites are located throughout the state, with an additional seventh site under construction (See Figure 1). The *Clemmons* location, situated in the center of the state and southeast of the Raleigh/Durham area, was the first to open in 1977. Second, *Homes*, located in the far southwest in the Blue Ridge Mountains, displays, according to the NCESF website, "rugged terrain, numerous rock outcroppings, and scenic vistas, it also offers a rich mixture of mountain hardwoods, rhododendron, flame azaleas, and a variety of wildflowers" (¶ 2). Third, *Jordan Lake*, positioned in Chapel Hill and close to the Raleigh/Durham metropolitan area, is near Jordan Lake, a human-constructed reservoir. *Rendezvous Mountain* is in the northwest portion of the state in the scenic setting of the Blue Ridge Mountains. Fifth, *Turnbull Creek* is located in the southeastern coastal plains region and contains "mysterious land formations" specific to North Carolina's Coastal Plain. *Tuttle* is nestled in the foothills of the Blue

Ridge Mountains and, according to the NCESF Web page (n.d.), "boasts a wide variety of pines and hardwoods plus rolling terrain and clear streams" (¶ 2). Last, *Mountain Island,* in the central southern region, is under construction and is due to open soon. Each of the sites is similar in how rangers educate children and manage the land, but each has slight differences in climate, topography, and forest life.

Figure 1. Map of the North Carolina Educational State Forest Sites. I conducted research at six of the seven sites, excluding the Mountain Island location which is under construction.

A number of educational services and features are available in the sites. Each site allows the public to partake in a variety of self-guided trails and spaces, such as exhibits, educational centers, "talking trails" (specifically "talking trees," "talking rocks," and a pair of "talking mules"), "forest demonstration trails" (places where people can see forest-management practices, such as prescribed burning and clear cutting), rest areas, and picnic areas. Teachers, youth group leaders, and others bring children to the sites to partake in a variety of structured EE classes. In addition to their management and maintenance duties in the forests, specially trained rangers lead the classes, which are typically 45-minute sessions that cover elements of forest ecology, including soil, water,

animal life, plant life, timber collection, and forest management. The following description of the classes is from the NCESF (n.d.) website:

> Our classes are designed to help learners under-stand [*sic*] that forests are complex ecosystems that can be managed for many uses. These classes cover topics such as how to tell the age of a tree, how forests influence wildlife and how important North Carolina's forest resources are to the state's citizens. (¶ 6)

The classes offered at the sites must meet the North Carolina Department of Education's curriculum and teaching goals, specifically the Department of Public Instruction's (DPI) science objectives. The DPI works under the direction of the State Board of Education and puts into practice the state's public school and board of education's laws, policies, and procedures for K-12 students in the state. The DPI is charged with maintaining instruction, accountability, funding, teacher and administrator training and licensing, professional development, and educational support and operations. Most important, the DPI develops, oversees, and assesses the curriculum, subjects, and content of the courses. The DPI science curriculum focuses on the National Science Education Standards that advocate "scientific literacy" in order to:

> Find or determine answers to questions derived from everyday experiences. Describe, explain, and predict natural phenomena. Understand articles about science. Engage in non-technical conversation about the validity of conclusions. Identify scientific issues underlying national and local decisions. Pose explanations based on evidence derived from one's own work. ("Science," n.d., ¶ 2)

Therefore, while rangers can personalize the lessons somewhat, rangers must use pre-approved curricula while teaching. If rangers want to teach a new lesson, they must design it and have it accepted as science-curriculum appropriate before they can teach it.

The classes are designed and delivered in line with various objectives and according to grade level. Examples of science objectives include "using natural resources wisely," "investigating plant communities and the ecological relationships among plants and animals," "investigating animals and their behavior within natural environment," and "exploring the water cycle." Under the same science objective, a child receives instruction according to grade level. For example, under the "using natural resources wisely" objective, a second-grader partakes in the classes "Forest Life Activity," "What We Get from Trees," and "How Paper Comes from Trees." Under the same objective, a fourth-grade teacher can choose classes, including "Tree Rings" and "Predator and Prey." Essentially, when children come into the NCESF sites, the instruction and materials they are exposed to are framed within a specific scientific framework and curriculum designed for their grade level.[10]

The forest sites maintain business operating hours and are open year round. Classes are conducted from mid-March to mid-November. During the four-month down time (mid-November to mid-March), rangers work on site, including what rangers identify as managing the forest, working on developing trails, harvesting timber, and maintenance work.[11] Some of the sites attract tens of thousands of visitors a year,

---

[10] A further discussion of the role of science in EE curriculum and research is discussed in length in Chapter Two.

[11] Whenever possible, I use the terms and jargon that rangers and participants use. Important to remember, however, is that these terms clearly construct nature through the institutional lenses of these participants. For example, "harvesting timber" is a term that illustrates a producer-consumer

including between 4,000-5,000 students who specifically come for lessons; other sites are less visited because of their remote locations. In addition to students, visitors come to use the picnic facilities, including tables and grills. A large shelter with a fireplace can be reserved to accommodate large groups. Other visitors use the trails, including dog walkers.

Each NCESF site employs between one and four full-time staff, including one supervisor and additional educational forest rangers. They spend their time in three general categories: a) scheduling, coordinating, and teaching lessons and classes; b) forest management, which includes prescribed burning, thinning, clear cutting, planting, timber barking and production, food plots for wildlife, updating their management plan that they then work from, and conducting general experiments; and c) maintenance, including clearing the trails and roads, cleaning bathrooms and recreation sites, conducting trail work, equipment maintenance, and working on paperwork and administrative issues.

State and Local Agencies

The largest overarching organization that governs the six sites is the North Carolina Department of Environment and Natural Resources (DENR)—a state-run and sponsored organization that describes itself as the "lead stewardship agency for the preservation and protection of North Carolina's outstanding natural resources" ("About DENR," n.d.). DENR has a rather complex organizational structure that includes a state secretary's office and staff, divisions, programs, regional offices, boards, councils, and commissions. The department has the task of administering various environmentally

---

lens. I use the terms rangers and forestry use to show how participants perceive their duties and roles while also pointing to how these terms construct nature in a particular way.

related programs, and its divisions include air quality, aquariums, costal management, EE initiatives, forest resources, marine fisheries, parks and recreation, water quality and resources, and zoological parks. The organization runs regulatory programs that deal with the protection of air and water quality and various health issues.

According to DENR's 2008-2009 strategic plan, its mission is "to conserve and protect North Carolina's natural resources and to maintain an environment of high quality, for the health, well-being and benefit of all" (Strategic Plan, 2008-2009, p. 1). Its vision is listed as "North Carolina: Green and Growing" (Strategic Plan, 2008-2009, p. 1)! In addition, DENR offers assistance to businesses, farmers, local governments, and the public to encourage "responsible behavior . . . through education programs provided at DENR facilities and through the state's school system" ("About DENR," n.d.). DENR's natural resource division deals with the protection of wildlife and wilderness places.

Next, under DENR is the Department of Forest Resources (DFR, also colloquially called the "NC Forest Service"), which is the direct overseer of the six ESF sites. The DFR is mandated and directed by NC General Statutes and the NC Administrative Code to "protect, manage and develop the forest resources of the state" ("About DENR," n.d.). DFR employs rangers who are charged with reforestation services, fire prevention and suppression, insect and disease control, tree seedling nurseries, forestry planning, water controls, urban forestry assistance, training, support to volunteer fire departments, and forestry education.[12]

[12] In addition, each site slightly differs in how it is owned and operated. For example, while other NCESF sites lie on state-owned land, the Jordan Lake ESF lies on federal land operated by the U.S. Army Corps of Engineers. Jordan Lake ESF leases land from the Corps (or as the rangers on site often

Federal Forestry

The NCESF originally was established with some help from US Forest Service funding and grants and retains forestry ideologies and practices similar to federal forest agencies. While I do not have space for a complete history of the Forest Service, a brief overview situates and contextualizes the sites in larger federal agencies, histories, and conceptualizations of forests.

The institutional origins of federal forestry (and, in turn, their influence on state forestry) stemmed from a presentation by Franklin Hough to the American Association for the Advancement of Science, where he warned of the devastating and catastrophic effects of not protecting the nation's forests. Hough was inspired by the likes of George Perkins Marsh (and his influential book *Man and Nature*), who often is cited as one of the founders of the conservation movement.[13] In 1897, Congress enacted legislation to manage public forests, and the forest service was officially established in 1905 (Bergoffen, 1976). Gifford Pinchot became one of the most influential players in the creation of federal forestry. Pinchot spent time studying forestry practices in Germany and France, and he was exposed to French, German, Indian, and Swiss forestry ideologies. Pinchot is typically called the first Chief Forester in the United States.

Important to note is that the sites I researched in this project are forests and *not* "parks," and many people confuse them. The National Park Service is governed by the Department of the Interior and housed under the federal government's executive branch. The National Park Service implements mostly *preservationist* beliefs and practices, as

---

call it, "the feds"). By agreement, the funds that Jordan Lake generates must go back into the forest, versus into a general fund, as happens at the other sites.

[13] Kosek (2006) notes, "Marsh's position represents a break by suggesting that nature—its well-being and its improvement—be a separate target of government attention" (p. 74).

they were originally conceptualized by people like John Muir, a naturalist who advocated for the protection of nature places. In contrast, the National Forest Service implements *conservationist* ideologies and practices, as conceptualized by people like Gifford Pinchot. The Forest Service is run by the U.S. Department of Agriculture (USDA), which treats forests like any other crop—to be managed and harvested so that they can be used in the present and conserved for future generations. On the one hand, park preservationism and forest conservationism differ; on the other hand, they can be conceptualized as two sides of the same coin. They are both Western anthropocentric ways of conceptualizing nature and the role of humans in it. However, for the purpose of this study, it is important to remember that these sites are forests and not parks.

Oravac's (1984) examination of the Hetch-Hetchy Valley environmental controversy further articulates the difference between forest and park ideologies. Oravac shows how, in the dispute over whether to build a dam in Hetch Hetchy Valley in the Yosemite National Park, conservationism and preservationism articulated differing strategies and conceptualizations of "public interest." Conservationists promoted a utilitarian view THAT espoused "the greatest good for the greatest number" and argued that building the dam would best serve the public interest. In contrast, preservationists argued that not building the dam would serve a "national interest" by maintaining the aesthetic natural beauty and integrity of the area. Both sides were deeply influential in constructing differing notions of nature, and the conservationist argument prevailed when the dam was built.

Essentially, Pinchot's ideas represented a major shift in the role of the forest service away from park preservationism. Whereas efforts (such as those driven by Muir)

worked to *protect* trees and nature, the forest service began to use forests on principles of accounting and economics, pointing to a role in forests' *profitable production*. This notion of production has reconceptualized what Kosek (2006) calls "public lands as government-regulated spaces of production" (p. 81). The notion of scientific and maximum-production based forest management has its origins in 18th-century Prussia and Saxony. Rotational farming changed to "scientific forestry," which espoused intensive forest measurement and corresponding management to produce the largest possible consistent volume of wood. This approach permeates ideologies throughout the NCESF. While it is a state forest system, the NCESF conceptualizes forests in similar ways as federal forestry—natural (and national) resources that should be managed for continued use.

In sum, this section explains the physical, ideological, and political settings of this project. As a place-based forest EE site, the NCESF has an important role in educating children. I overviewed how the NCESF is governed and detailed the physical layout and characteristics of each of the six sites that I visited. I also summarized the agencies that oversee the sites and how they are shaped by federal forestry. These contexts and agencies shape what is taught at the sites.

Research Questions

In the next two sections, I move from a rationale and site description to the questions that drive this study. The purpose of this study is to explore how rangers, teachers, curricula, and forestry influence students' meanings about the nature-human intersection in the NCESF.[14] To analyze communication and educational messages and

[14] Throughout this dissertation, I often write sentences in a passive voice due to the long list of actors and subjects that I discuss. For example, when I refer to "framing," as in "nature is framed as," I am

practices and to explore how ideologies and systems shape meaning, three questions guide this study:

1. How do rangers, teachers, forestry, and curricula conceptualize, construct, and frame nature and the role of humans in it?
2. How do people and parties resist and complicate dominant framings?
3. What are the possible intersections and implications of what is being constructed, produced, and performed about human-nature relations?

In the first question, I seek to determine the dominant framings and constructions that people and parties offer and promote on the sites. The assumption underlying the second question holds that people do not automatically "construct" and then receive framings of nature; humans and nature resist, complicate, and respond to dominant framings in a variety of ways. Additionally, the second question explicitly works from the emerging notion in environmental communication that human-nature relationships constitute an expressive co-presence, where communication mediates interactions and relationships (Carbaugh, 1996, 1999; Cox, 2007; Milstein, 2008). The third question allows me to conceptualize the possible implications and intersections between dominant and alternative framings, notably how forest EE intersects with NDD and the implications of promoting NDD as a way to conceptualize and address environmental alienation. Moreover, this question allows me to complicate and break down simple distinctions between nature and humans. In addition to these questions, I work to contextualize this study within broad cultural and educational practices.

---

pointing to a lengthy combination of rangers, forestry officials, supervisors, teachers, chaperones, parents, and curricula that structure what I am finding.

As the research questions in this study indicate, the notion of framing is central to this project. Scholars define and use framing in a variety of ways in areas such as rhetoric, organizational, and media research. Burke (1945) and Goffman (1974), to name a few, rely on notions of framing. For example, through the theory of terministic screens, Burke conceptualizes framings as sets of symbols humans use as a lens through which they see the world. Several scholars have discussed framing in relation to environmental issues (Cox, 2010; Foust & Murphy, 2009; Lakoff, 2010). In their examinations of climate change discourse and rhetoric, for example, Cox's research explores the effects of media, political, and activists' framings, and Foust and Murphy examine apocalyptic frames of global warming and how they can potentially motivate public action.

In this study, then, by framing I mean a variety of perspectives or lenses that rangers, teachers, forestry, and curricula use to make sense of human-nature relations. I examine the linguistic, ideological, and spatial frameworks that people and parties use to organize and arrange nature and the role of humans in it. Specifically, I examine how humans frame nature through the senses, human language and discourse, and cultural systems, institutions, and practices. I explore not only how humans frame nature-human relations, but the possible implications of these ways of conceptualizing the world.

Researcher Perspective

My paradigmatic and methodological perspective and assumptions are central to this project. Here, I briefly overview the epistemological lenses through which I approach this project and the research sites, namely interpretive and critical approaches.

An Interpretive Approach

I work from an interpretive methodological lens and do so for a number of reasons. I am interested in how individuals, groups, and systems create meaning in everyday lived practices (Guba & Lincoln, 1998, 2005; Kirk & Miller, 1986), specifically how actors communicate, construct, and then consume "nature" in the research sites. Ontologically, the interpretive paradigm sees reality as socially constructed and rejects a realist stance; "reality" exists locally and is culturally constructed within a group (Guba & Lincoln, 1998, 2005). I incorporate this stance because I am interested in exploring how knowledge is found within interaction at the NCESF sites and according to how individuals within this system perceive it.

Additionally, the interpretive paradigm holds that the researcher is a lens, or, a "human instrument" through which research is conducted and should not be discounted (Fetterman, 1989; Guba & Lincoln, 1985). The functions and goals of the paradigm allow for deep understanding at a local level, where a researcher carefully "interprets" what is seen in a specific context (Guba & Lincoln, 1998, 2005). Culture is seen as emerging within the research as shared codes and systems. Various attributes of the interpretive paradigm are suitable to the questions I ask, specifically how I am positioned within a community to determine how communication materializes within members of a group. My study is similarly marked by observation and immersion in the research site (Fetterman, 1989; Guba & Lincoln, 1998).

A Critical Approach

I use a critical framework in this study to explore power relations. I work from an ontological position that views reality as socially constructed and contextually constrained around issues of power (Guba & Lincoln, 1998, 2005). My epistemology is

mostly subjective, and I see knowledge as "socially created," where ideology, domination, and hegemonic forces serve as factors that influence and control nature and humans. My axiological stance holds that values are inseparable from my research, as my functions and goals are to critique, expose systems of oppression, and create different ways of seeing these issues (Guba & Lincoln, 1998, 2005). In the critical paradigm, culture is seen mostly in terms of macro structures and systems and as driving and controlling forces in which economic, cultural, and material factors create unequal social relationships and material conditions.

I argue that combining interpretive and critical perspectives in this study orients my topic dialectically and enables me to understand political and historical contexts and positionalities as they surface within a community (Guba & Lincoln, 1998, 2005).[15] I combine critical and interpretive paradigms to accommodate the limitations of both. Smith (1998) notes what is commonly missing from solely critical approaches: "What implications do the debates over valuing the environment have for existing approaches towards justice, entitlements, and obligations" (p. 3)? Critical approaches are vital in uncovering how power operates, and adding interpretive methods incorporates much needed descriptive and rich understanding and contextualizing. Interpretive approaches lead me to investigate how meaning is made. Examining macro level issues enables me to contextualize these meaning systems to explore power relations and structures that are integral to understanding stakeholders' voices.

---

[15] Sorrells's (2003) *Embodied Negotiations* is an example that follows this mixture of paradigms. Sorrells begins with an interpretive approach to examine how Pueblo pottery and Navajo weavings in Northern New Mexico are (re)constructed through tourist consumption. Using observation, interviews, and photography, Sorrells argues that interpretive research allowed her a deep understanding of how Navajo and Pueblo women understood, negotiate, and perform this process. Sorrells then used a critical lens to situate the art in overarching histories of colonialism to show what oppressive function consumption serves and how larger cultural and political processes shape meaning.

Last, numerous researchers incorporate paradigms that fall outside of typical interpretive and critical paradigmatic approaches (e.g., Haraway, Anzaldúa, hooks, and Carbaugh). These authors also encourage me to insert the personal into this project, evoking the notion of personal experience (Foss & Foss, 1994) in varying ways. Therefore, I constantly asked myself throughout this project: what am I bringing to this study? How does my past, standpoint, and training influence how I experience this educational forest, these children, and these trees? What relationship do I have with the trees, the forests, nature, the trails, rangers, and children? As fitting with interpretive and critical methods, these reflexive questions are crucial to ask.

Preview of Chapters

In Chapter Two, I describe four bodies of literature that position this study. I first discuss the social construction of nature, including what is being constructed and how, what constructions enable, and scientific and political constructions. Next, I examine nature-culture literature within the communication discipline ("environmental communication"), detailing the subfield's origin, approaches, the emerging notion of "mediation," and several important studies that inform this project. Third, I explore the body of research surrounding consumer and commercial appropriations of nature. I end by examining environmental education, including both legislative and academic discussions. Throughout, I show what has been and is being studied, future research areas, and how this literature informs this project.

In Chapter Three I describe the data collection and analysis techniques I use. I explain the data collection, including my role as an observer in the lessons, as a participant observer in the sites, the collection of interviews, and my use of textual

analysis of artifacts. I then provide a summary of the data I collected. This chapter also includes a discussion of the data analyses methods, namely a grounded-theory approach that incorporates generative rhetorical criticism.

In Chapters Four, Five, and Six, I analyze the data I collected to conceptualize how environmental meaning is framed in the research sites. In Chapters Four and Five, I first detail two dominant framings promoted by forestry, rangers, educators, and curricula. In the first frame in Chapter Four—organizing and containing nature—people, parties, and curricula construct nature as ordered and confined. In the second theme in Chapter Five—producing and using nature—nature is framed as an entity that is created for humans to use. In Chapter Six, I present a third theme—resisting constructions—that points to how parties resist, challenge, or question dominant framings.

Last, in Chapter Seven, on the basis of my analysis, I develop three overarching theses to provide theoretical interpretations of my findings and situate them in extant literature. My first thesis argues that organized and contained constructions of nature promote a *get close-stay away* dialectic. Second, I identify dominant framings that center on producing and using nature in a way that encourages a *production-consumption* context and cycle, which promotes the consumption of trees, maintains producer-consumer relationships, and produces a number of outcomes. In a third thesis, *interrupted boundaries*, I conclude that humans and nature complicate and rework traditional human-nature binaries. I then return to NDD and make the move to rediagnosis the problem, pointing instead to schizophrenic-like perceptions and relationships that contribute to environmental alienation. Advocating for children to "go back" into nature—a major

tenet within the research sites I examined—obscures important issues that contribute to environmental estrangement. Finally, I offer possible ways to rework forest EE practices.

CHAPTER TWO: LITERATURE REVIEW

Four bodies of literature situate this study and are central to understanding human-nature relationships in the research sites. This chapter expands on four pertinent constructs located in interdisciplinary research within communication studies. These constructs are the extant literature in which this study is situated and includes: a) the social construction of nature; b) communication and nature-culture relations ("environmental communication"); c) consumer and commercial appropriations of nature; and d) environmental education (EE). Throughout this chapter I examine each area, show what has been studied, what concepts are examined, what future areas of research are possible, and explain how this literature relates to and informs this project.

Socially Constructing Nature

I work partially from the body of literature that positions nature as socially constructed, and scholars mean a number of things when they assert this. In this section I first overview varying social construction arguments and their relationship to communication scholarship. Next, I examine construction processes, including what is being constructed and how. I then explore possible outcomes of the social construction of nature and what construction enables. I end by exploring two specific paradigms of construction that relate to this study—scientific constructions and political constructions. Because my research questions center on how human-nature relationships are constructed and what these constructions produce, this literature is central to this project.

Construction Arguments

A plethora of scholars have examined social construction and nature (Castree & Braun, 1998; Demeritt, 2002; Escobar, 1996; Glenn, 2004; Proctor, 1998; Spirn, 1996;

Stibbe, 2001; Williams, 1980). In fact, when studying human-nature relationships, Demeritt (2002) argues that the social-construction metaphor is becoming dull from overuse. This certainly could be the case, yet the frequent use also illustrates the importance and prevalence of this research in nature-culture theorizing. Across disciplines, scholars examine how humans use cultural systems to "construct" what the physical world is and means.

In construction arguments, the relationship between the material and the symbolic should be briefly noted.[16] First, elements of nature embody material and physical forms, including living and nonliving life forms that occur "organically" on Earth. A tree exists and can be perceived as an object with characteristics (roots, trunk, and branches) that embody physical space. Second, humans do not just experience environmental stimuli; via systems of signs, they symbolically construct and cognitively and emotionally perceive them and act based on those perceptions. As Cavallaro (2006) notes, "Signs do not embody specific meaning or concepts. Rather, they give us clues which only lead to meanings through interpretation" (p. 16). What a tree denotes to different people depends on how the tree, as a sign, is created and deconstructed (or whether or not and how it is even conceptualized as an entity). Here, from a symbolic interactionism perspective, the way humans act toward and interpret trees derives from meanings constructed during social interaction. Someone living in a suburban U.S. neighborhood may prune a tree's branches because the tree is perceived as something planned, planted, and under the ownership of the property or neighborhood in which it is rooted. In another setting, a

[16] I only briefly overview the material-symbolic discussion, as it is not my central framing in this project. Yet, Butler's (1993) argument that matter is only materialized symbolically is important to note. To suggest that there is a non-material element of the symbolic reifies a false dichotomy which denies how things come to matter.

logger may perceive the same tree as a source of income and livelihood, an object to be used for human benefit.[17]

Essentially, on one hand, social construction of nature literature notes that there is likely a "real" world, made up of physical and material phenomena and entities. This materiality exists independent of human thought, culture, and agency. On the other hand, what the natural world comes to mean is contingent on culture. Via culture, then, humans "construct" meaning from the physicality of the natural world. Both are certainly important when studying nature-human issues. When focusing too much on the social construction side, the natural world can take a back seat with serious repercussions on both the natural world and humans.[18] Alternately, when focusing too much on the material, the influence of the human as being part of the natural world is obscured.

What scholars mean when they assert "humans construct nature" varies depending on disciplinary, philosophical, and theoretical assumptions and commitments. Some approaches see nature as minimally constructed or constructed in certain patterns and

---

[17] Also at the heart of this issue is a semiotic discussion, via Saussure (1965), of the relationship between the sign and the symbol and between the reference and referent. For example, in semiotics, a tree (a physical, material object, or, the "referent") and the word/concept *tree* (a human-created symbol meant to refer to the physical, or, a "reference") do not have an inherent and natural relationship to each other. The symbolic meaning that is created between physical "nature" and human cultural systems is complicated in that people have differing symbolic meanings of signs based on arbitrary relationships. Semiotics speaks to nature-culture issues in that what is constructed is taken from a series of signs and symbolically used in human relationships and in shaping the material. From a phenomenological perspective, "real" and "perceived" environments come into question and a philosophical discussion becomes pertinent. Pepper (1984) sums up the material-symbolic argument: "If there is a difference between . . . real and perceived nature . . . and if the latter is 'potentially just as influential' as the former in determining what we do about, and to, our environment, then this soon begs the question of just how important is 'reality' at all . . . and how we can possibly know, objectively, 'facts' about our 'real' environment" (p. 8). Yet, the very process of culturally creating something symbolic from a sign or a reference is done not in the application of a symbol onto a referent, but in the relationship *between different signs* from which to compare it.

[18] For example, in anti-global warming discourse, parties who argue humans have "made up" global warming deny important material phenomena in weather and climate patterns that are largely human induced.

orders (such as a post-positivist stance typically maintains); others see "nature" as entirely socially constructed, with different characteristics and implications. Demeritt (2002) unpacks these different notions, arguing that constructionism is a general body of theories in the social sciences and humanities that underlie much construction theorizing. Constructionism is important because it allows a researcher to question taken-for-granted assumptions that are naturalized. It allows researchers to uncover how power operates and what implications people and cultural systems have for "nature" and for each other.

Demeritt (2002) expands on various kinds of constructionism. *Phenomenological constructionism* discusses various environmental and social issues and sees construction as mainly cognitive. This position appears to resemble post-positivist assumptions, where a researcher takes an agnostic stance. In contrast, the *Sociology of Scientific Knowledge* offers an interpretive stance that involves the examination of how people see their own constructed natural world. *Discursive constructionism* takes a post-structuralist and hermeneutic stance; Foucault (1966/1994) and Escobar (1996, 1999) are part of this tradition. *Discursive constructionism* exposes notions of power and the importance of language and discourse in constructing nature, identifies Enlightenment assumptions of truth and reason, and questions the role of science and technology in knowledge creation. Discursive constructionism is more theoretical and abstract than the previous two, and considers the researcher to be involved as a political agent of change. Demeritt further details that constructionism depends on various definitions of nature: a) a human-created phenomenon (similar to culture, thought to be socially constructed); b) a force; and, c) a material phenomenon and reality that may or may not include the human. *SSK* and

discursive constructionism are both areas with which I identify and in which this project is situated.

Construction Processes and Outcomes

How and from what or where do humans construct nature? First, construction takes places through processes of difference, hierarchy, and nature-culture dualistic thinking. Humans have pried themselves from nature and hierarchically positioned themselves at the top. The extraction of humans from nature then enables people to perceive of a binary where, as Carbaugh (1996) notes, culture is discussed sans nature, nature sans culture, in which communication is just a matter of discussing both. In the field of cultural studies, Slack (2008) argues that it is virtually impossible not to create some kind of nature-culture binary; to bring "nature" and "culture" into the Cultural Studies room is to automatically create a binary, according to Slack. Rogers (1998) agrees that this similarly and frequently happens in the communication discipline.

There are three specific ways in which humans can construct nature: Through the senses, through human language and discourse, and through cultural systems and institutions. First, some scholars point to the importance of the senses in perceptions of the natural world. In respect to nature-human relationships, Hayles (1996) takes an almost purely social-construction stance in arguing that there is no difference between physical reality and what is socially/culturally/technically constructed. Hayles cites research on the visual cortex of the frog to argue that due to the physical structure of the eye (and of all senses), a being will see and experience the material in a particular way. Further, because each being has different structural senses, each sees the material in its own unique way. Hayles uses this point to argue that senses "create" the natural world

into being. While I do not agree with such a strict constructionism stance, I do argue the senses (as they are mediated by culture) influence what is experienced. This area of research that focuses on sensory construction is relevant to this study because of the ways in which rangers, teachers, forestry, and curricula evoke the senses to frame nature (ocularcentrism in particular). As this project will show, environmental education conceptualizes senses as central to children's understandings of the natural world.

Second, scholars argue that communication informs the construction of human-nature relationships through language and discourse. Numerous scholars argue that human language systems have a profound impact on determining what the material means. Slack (2008) argues that the words *environmental* and *ecology* inherently infer a separation between humans and nature, pointing to an already complicated relationship between the referent and reference. One example of Slack's articulation of the human-nature separation (and the political and cultural notions that underlie it) is illustrated by Adams (1990) who situates meat, its production, distribution, and meaning within a political-cultural context. Similarly, Stibbe (2001) illustrates how humans construct animals though language, where humans use *beef* instead of *cow, carcass* instead of *dead body/corpse*, *hide* instead of *skin*, and *meat* instead of *flesh*. These discursive creations separate the concept of an animal's body from a human's. Schultz (2001) similarly illustrates linguistic features that humans use to construct nature. Schultz gives examples such as *development* (and later *ecological development* and *sustainable development*) and what they infer. Using *weed* to mean indigenous plant life, or *trash* to refer to fallen plant life on a forest's *floor* enables humans linguistically to construct particular meanings of nature. Further, Chawla (2001) looks at how specific features in the English language

objectify the natural world. Chawla notes that English, science, and technology have served the function of creating and objectifying time by placing it in a linear fashion and in a strict three-tense structure (past, present, future). Cronan (1996b) expands on a similar argument in noting how many U.S. Americans have constructed the notion of "wilderness," which has come to symbolize an empty, pure, and static nature void of the human.

Rogers (1998) cautions scholars in their use of constitutive theories. Discursive theories pointing to the social and political roles of discourse can have political benefits; in showing how humans construct and the implications of these constructions, scholars are able to challenge and expose power. However, Rogers argues that, because they often come from constructs appropriated from the Enlightenment, power, and gender politics, discursive theories also can trap the researcher in a nature-culture binary, where they end up making nature a passive entity that is strictly malleable by humans. In this process, a researcher may strip nature's agency by only discussing how humans use and modify nature.

Third, in addition to the senses and human language, culture systems and institutions construct human-nature relationships. For example, Weaver (1996) shows the role government plays in literally constructing nature in the making of the Great Smokey Mountain National Park. In order to make the park, the government took all people out of the area and purchased small, private parcels of land. To convince the public that removing people from the park was necessary, the government engaged in a public campaign to depict the mountain people as lawless, dangerous, and environmentally unfriendly. Government molded public opinion by using a class-based argument of the

space and people in it. Weaver shows that although government did so to "protect" the area, public land acquisition can have social justice implications. Essentially, human-created cultural systems and institutions construct and mediate human-nature relationships.

That humans construct nature allows for a number of outcomes. First, constructions allow humans to control, mold, and subjugate the natural world, including land, animals, and space. When scholars argue that humans construct nature, they often do so to show how that construction takes place in ways that disproportionately privilege humans over nature. Demeritt (2002) argues that just because something is socially constructed does not mean it is "wrong" or unworthy of belief. Yet, many modernist environmental discourses that underpin social construction often privilege the anthropocentric positionality of humans. For example, Stibbe (2001) argues that dominant discourses and systems have allowed humans to put themselves above animals, creating a common sense aura that normalizes animal subjugation. Similarly, Sztybel (2006) identifies thirty-nine similarities between how Nazis perceived and acted toward subjugated people during the Holocaust and how humans treat animals in modern-day industries. The construction of human-animal domination allows humans to control and kill animals in non-humane ways without ever questioning this practice.

Additionally, human power over the natural world allows humans to control and subjugate other humans. Cronan (1996b) notes this rather ironic process in many U.S. "wilderness" areas; to construct "virgin" and "pristine" places in the United States, the government ejected Native American people and placed them on reservations. Constructions of this type trap humans in specific economic and social relationships by

normalizing hierarchy. For example, Escobar's (1996) notion of poststructuralist political ecology shows how, in many international development contexts, environmental pleas are made to serve larger goals of accumulating capital rather than addressing the specific needs of cultural groups. In this context, human relationships with nature depend on what nature can do for humans, and then what some humans can do for others. This is the reason why numerous scholars call on humans to conceive of different relationships with each other when addressing "environmental" issues (Haraway, 2007; Williams, 1980).

An interesting extended example of research on the meaning of the social construction of nature comes from Burnett's (2007) *Trying Leviathan*. Because this text intricately shows what social construction enables and the form it takes, I spend time detailing it here. Burnett historically and critically examines an obscure court case to discuss how cultural ideologies construct the natural world and influence nature and humans. In 1818, a New York merchant, Samuel Judd, refused to pay a "fish oil fee" on several casks of whale oil to a fee collector. Judd argued that because whales are not fish, the whale oil should not be subjected to the fee. On the surface, this case appears to determine if whales were fish as Biblical and popular accounts held, or something else entirely, such as the emerging scientific belief that whales are mammals. However, Burnett shows how deeper questions were at stake. Are whales fish? If they aren't, what are they? What is their exact place in the order of nature? Most importantly, how is nature ordered, what function do these orders serve, and who gets to decide?

Contradictions in these orders started to surface that illustrate how order is constructed. Science, religion, and popular consensus contested what a whale is and how it should be ordered. Similar to Darwin's example of how a "hermaphrodite" does not fit

cleanly in (human-construed binaries within) sex and gender, whales do not neatly fit into one category; thus, how they are defined becomes problematic. For example, whales suckle their young, yet they live in the sea. Instead of whales being an anomaly, they point to a central problem of knowledge construction. When taxonomies are contested, it shows how the *construction of order itself* is what is problematic; this does not imply that there is a "real" order to nature that humans must find, but, instead, the reason why these orders begin to fall apart is that they are culturally constructed. Foucault (1966/1994) simultaneously shows that all orders can be reordered, as illustrated by his Borges quotation of a fictional Chinese dictionary entry where animals are ordered in alternative ways.

That orders are contested points to what these taxonomies *do* and stresses the point of what construction enables. In the process of ordering, a distinct nature-culture binary is made. Ordering the natural world in this way allows humans to separate themselves from nature, form that order to taxonomies, and then rank all life forms accordingly. How humans then act toward nature (and each other) is dependent on how taxonomies are constructed.

The issue of why humans engage in ordering processes is similarly important to note. Some argue that perhaps humans are fearful of the random, unpredictable "natural world," and, as a result, efforts to create and impose order (such as those associated with the Enlightenment) ease human uncertainty and fear (Horkheimer & Adorno, 1976). Shepard (1982) asserts that the invention of agriculture contributed to a compartmentalized and contained nature. Essentially, outside of human created systems of meaning, the natural world is difficult to "know." Culture then can imprint meaning

onto nature, where systems, institutions, and discourses serve important functions. Due to historical constructions of science as objective and as an institution based on facts and data, science often is granted an unquestionable authority, and the enviable role of being able to speak for nature. In this process, institutions serve a political purpose of allowing people to argue what "common sense" entails, a process that then allows a hegemonic understanding to develop. Additionally, language "intervenes" between humans and, by its nature, mediates the world in particular ways.

Scientific Constructions

Human conceptualizations of nature in my research sites are difficult to approach without a deeper understanding of how nature has been constructed and positioned within a Western scientific episteme. Pepper (1984) identifies the influences of medieval cosmology in 12th- and 13th-century European environmental discourses. Inspired by Aristotelian and Judeo-Christian paradigms, scholars like St. Thomas Aquinas and Albertus Magnus mapped out a geocentric ideology of nature, with the Earth at the center of the universe, and humans at the center of the Earth. The scientific revolution of the 16th to 17th centuries (influenced by Copernicus, Kepler, Galilei, and Newton) gave rise to an Einstein-inspired physical approach.

The scientific revolution openly challenged cosmographic assertions and saw nature as quantifiable and explainable by mathematics and reason. Science positioned nature as "a machine whose workings were governed by and predicted through mathematical law" (Pepper, 1984, p. 48), and people like Francis Bacon contributed that "scientific knowledge equals power over nature" (Pepper, 1984, p. 54). Physical science

and the scientific method (based on classical science) still influence understandings of nature today (Pepper, 1984).

Arguably the most profound and influential modern text in normalizing and legitimizing scientific constructions of nature is Charles Darwin's (1859/2003) *The Origin of Species*. Darwin has played a profound role in debates about science, natural science, and nature in his articulations of nature and the human-nature relationship. Darwin's text illustrates how science functions, what implications it has, and why these classical debates matter in the present. *The Origin of Species* is particularly important in debates of "nature" because it marked the merging of nature with a new kind of history according to a scientific teleology. Darwin contested popular Biblical accounts of all species descending from one source and at the hands of one maker and rather argued that humans (and the natural world) have evolved over time. Thus, Darwin's concept of evolution put a time to nature, such that a scientifically based natural history is how nature is constructed.[19] In Darwin's writings, time takes on a specific form; evolution is said to happen slowly, yet in a linear, teleological fashion, and all according to nature's will (where nature is the ultimate regulator).

Darwin's assumptions are important to note, as they point to the sociality of scientific fact. Darwin saw his and others' "facts" and "data" as uncontested and "real." At one point Darwin presents his theory as "facts" of science; he is only the messenger. Using this framing, he changed the very notion of taxonomies by arguing what was

[19] White (1995) argues, in contrast, that histories of nature lie *alongside* and in tandem with social histories and they should not be separated. This also allows us to reexamine the very nature of history. As Foucault (1966/1994) argues, history is not singular, logical, and neat; it is multiple, chaotic, contested, violent, and full of fissures. Imposing order on nature allows humans to think that we have it all figured out. In the end these arguments point to the role of natural histories in the remaking of the human and point to ways to reorder and redefine nature in order to redefine the human.

considered "scientific fact." Darwin defined and described the animal world by how a species *differed* and changed, not within its own life span or according to sexual organs and traits, but as compared to others across history and according to sexual reproduction. Darwin deems that space, expansion, and interbreeding are particularly beneficial to the survival of a species. Through an ascribed objectivist, scientific standpoint, difference and deviation are the measuring tools Darwin used to make his argument. In this process, competition, hierarchy, and struggle are normalized and rationally explained as an integral part of scientific method and how it understands and reports about nature.

The Origin of Species further shows how science is used as a tool to literally write human attributes into accounts of nature. For example, that Darwin uses the terms *monstrosity* and *hermaphrodite* are problematic in that these human words contain cultural baggage. A discussion of *slave-making insects* is an interesting example. Darwin depicts several ant colonies that have "slaves," complete with physical and social descriptions of these ants and their relationships. Darwin terms this the "wonderful instinct" of slave-making ants. That humans observe and describe the natural world is not necessarily problematic, but using loaded terminology like *slaves* and *monstrosity* to refer to the natural world is. While all language and terminology is embedded with human meaning, using these particular words position nature within a specific anthropocentric framework.

When Darwin scientifically constructs nature based on difference and deviation, he allows humans to then use nature as a scientific tool to define the human according to difference. If humans turn to science and deduce that beings in nature are "naturally" different, that difference has rank and hierarchy (based on competition, fitness, survival,

and geography), and is simply the order of nature, then difference among humans is normalized. Class, race, and gender are then at stake in classic debates about "human nature," with social-justice implications. As in many contemporary debates, science often is granted the role of the ultimate authority, where one person's perspective (i.e., Darwin) is taken as fact and uncontested.[20]

Science becomes the means by which humans put onto the natural world that which is cultural and political and then return the gaze back onto the human. Hacking (2000), Williams (1980), Terry (2000), and Pratt (1992) argue that science is developed in and through the human, where humans construct the natural world (as separate from humans) and then use that constructed reality to redefine the human. Terry argues that, unbeknown to them, animals and nature help humans tell stories about humanity and normalize human heteronormativity and androcentrism. Pratt describes this process through travel writing from the 15th to 18th centuries. Explorers, colonizers, and natural scientists (many of whom worked with Linné to systematically catalogue plant life) spanned the globe and wrote narratives of their experiences with nature and people in the Americas and Africa. Pratt argues that these narratives were a way for Europe to define itself abroad by creating a "heathen" and "undeveloped" other. In this process, a superior

[20] Also important to consider is how religion intersects with science in constructions of nature. Merchant (1996) and Cronan (1996b) detail Christian influences on how nature is constructed and the material consequences of these constructions. Merchant (1996) argues that Christianity has created a specific human-nature relationship in the West through recovery narratives and plots and most environmental thought in the West has its roots in the Christian-based cosmology. For example, many modern Christians continue to debate the role humans play in a world created by God; are humans the stewards of God's Earth or did God intend for humans to use nature for whatever means necessary? This discussion illustrates how historical and philosophical ways of perceiving nature shape ideology and meaning. Moreover, Williams (1980) argues that what nature means (and the role of humans in it) has changed based on notions of spirituality and deities. Where "nature" and gods were once considered to be multiple, they were made to be singular. Humans then were extracted from nature and placed at the top of the hierarchy. Biblical scripture and science since have helped to construct the meaning of time in relation to nature.

identity and notions of empire are worked out abroad and then brought back to Europe, where the "Other" is created and used to define the self.

Pratt (1992) points to the history of natural science and colonial exploration to show how the process of constructing nature began in and through a scientific lens. Moreover, Haraway's (2007) discussion of "critter cams" reiterates how the need for science is normalized. Haraway charts how scientists use suction cups to attach cameras on the backs of humpback whales in Alaska to study migration and feeding patterns. In situations like this, "It takes believing that, under current conditions, knowledge saves. Sign me on to that religion" (Haraway, 2007, p. 256).

Political Constructions

Various classic texts have influenced political constructions of nature, such as Hobbes's (1651/1982) *Leviathan*, Locke's (1689/1997) *Two Treaties,* and Rousseau's (1762/1997) *Social Contract*. These and other texts show one role in particular that nature plays—that what gets put onto the material ("nature") is political; that is, "nature" serves the role of a regulator and moderator of human culture, politics, and society.

Politically, "nature" often is used by humans to accent the role of the ultimate authority. What gets socially placed onto nature enables it to be constructed in ways that allow humans to extend various forms of culture and politics. A number of examples point to how humans impose on the material in political ways. For example, in Melville's (1851/2001) *Moby Dick,* the character Ishmael ranks whales according to their human attributes (such as "shy" or "savage" and even notes how one "smiles") and points to their utility and function to humans, such as placing the "great" sperm whale at the top because of its majestic stature and its valuable spermaceti oil. Terry (2000) notes how

scientists conflate sex, gender, and sexuality when they conduct research and label fruit fly behavior as "gay," female primates as "lesbian," and rams as possibly "queer." Lastly, Haraway (2007) looks at how domestic pets are "humanized" and does so to reconsider a different "other worlding" relationship between humans and animals.

The ways in which nature is constructed and produced has implications for race, class, and the building of nation states and empires. Burnett's (2007) analysis of the ordering of whales can be used to help reconsider the order of nature and perhaps argue for multiple and simultaneous orders. This matters because how humans perceive nature and construct knowledge influences human relationships. If a whale is in fact deemed a mammal, what does this mean for how humans kill and consume them? This serves political functions and normalizes constructs such as human race and class. As Williams (1980) argues, we need new ideas of nature because we need new relationships with each other. Burnett ends with discussions of the need to reevaluate knowledge and taxonomies but also with considerations of what can happen if humans come up with something new. Further, if humans can *reconsider* the constructions that have been deemed "natural"—or at least realize they are constructed and contested—humans perhaps can envision new and multiple orders, new relationships with nature and with other humans, and perhaps new solutions to old problems.

While social construction matters in situating this project, a number of scholars call for reenvisioning the construction metaphor—and what construction produces. That something is "constructed" can enable humans to see that it may also be *de*constructed or *re*constructed in more functional ways. Demeritt (2002) asks scholars to reconsider using the phrase *production* of nature instead of construction, or to use the verb *to construct*

instead of the noun *construction*. Demeritt notes that using the verb form enables researchers to focus on the fact that the process is a current and ongoing one, instead of the outcome or an end product. Further, Cronan (1996a) reminds us that scholars do not have to choose between constructionism and materialism; it is not a binary that infers a decision must be made. Instead, Cronan calls on scholars to be dialectically mindful and reflexive in how they discuss how humans construct nature and the repercussions it has on material realities. Stibbe (2001) extends this argument by noting that language and discourse also can be modified to reduce the negative consequences of what is constructed. Stibbe argues that numerous animal-rights activists groups have taken it upon themselves to change the language that is used. Rogers (1998) also notes that the communication discipline is in the unique position of being in between the study of human and nature: "neither completely abstract nor completely concrete . . . We study neither 'only' culture nor 'only' nature" (p. 264). From this position, it is important to discuss how humans construct nature, but not to forget that "nature" is a material phenomenon outside of the human that should never be denied its own process or agency.[21]

Communication and Nature-Human Relations

With approximately thirty years in the making, communication and nature-human relations has established itself as a legitimate subfield in the communication discipline. While the subfield traditionally was labeled and still frequently is called "environmental communication," numerous scholars now refer to this body of study as "communication

[21] I address the issue of how constitutive theories can strip nature of agency in this project by not relying solely on social construction arguments and by incorporating "mediation" arguments within environmental communication, as the following section illustrates.

and nature-human relations" or some variation there of.[22] The shift in naming allows a conceptual move away from an anthropocentric focus on "the environment" and places more emphasis on the dynamic intersection of nature and culture and the binaries that govern relationships.

In this section, I first overview the field, its origins and approaches, and the notion that human-nature relations are "mediated." I then focus on how this area addresses the limitations of social-construction arguments. Throughout this section, I reiterate how research within communication and nature-human relations informs my project and is a conversation to which I wish to contribute.

Overview and Approaches

Historically, with emerging social movements such as those associated with human rights, civil rights, and gender equality, social-justice campaigns in the 1960s began emphasizing the importance of the environmental movement and setting the stage for both popular and academic attention. Similar to other academic disciplines, the subfield emerged as a result of larger social and political forces that shape and are shaped by public opinion, public policy, social activism, and academia. Within the communication discipline, examinations of the nature-human intersection mostly formed by incorporating research and theorizing from environmental studies, environmental science, risk management, sociology, feminism, cultural studies, natural history, and anthropology.

From these interdisciplinary origins, scholars in communication examine how, through media, industries, individuals, cultural institutions, popular culture, structures, governmental policy, and other mediating structures, humans communicate about nature

[22] In this project, I use these terms interchangeably to encompass both perspectives.

and how these discourses influence meaning. As the environmental immediacy portion of this literature review has illustrated, in an era marked by environmental crises, scholars who examine environmental communication largely are interested in how communication processes influence how humans perceive, understand, and behave toward the natural world. Moreover, larger cultural, social, political, and historical contexts shape not only communication processes about nature but also the natural world itself.

Beginning in the early 1980s, authors, activists, and academics situated nature communicatively. The subfield began to look at how and why environmental ideologies are created and manifested through communication processes. As previously mentioned, widely touted to be the first study merging nature and communication is Oravac's (1981) examination of John Muir's rhetorical narrative strategies, specifically in Muir's evoking of a "sublime" response to persuade citizens to support the creation of the Yosemite National Park. Muir actively constructed nature for many who did not have access to remote nature areas such as Yosemite. In a later study, Oravac (1984) shows how, in the debate over whether to build a dam in Hetch Hetchy Valley in Yosemite, conservationism and preservationism constructed and utilized various strategies and conceptualizations of "public interest." Both sides were deeply influential in constructing nature and what happened with the dam and the valley, yet the conservationist argument prevailed and the dam was built. These studies and others began to set the stage for examining how rhetoric, commerce, government, and organizations all produce human-nature relationships through communication in ways that had detrimental outcomes for humans and nature.

In the inaugural issue of *The Environmental Communication Yearbook*, Senecah, Depoe, Neuzil, and Walker (2006) note: "Next to the Civil Rights Movement, the Environmental Movement has proven to be the most influential movement of U.S. society and perhaps the world" (p. x). The communication discipline began to pay attention to nature as not just a backdrop or setting, but as an inescapable force that mediates and is mediated by communication practices.

Also interesting is how history itself was constructed in this inaugural issue. When the editors reconstruct the history of communication and nature-human relations, they engage in a "__ years since" narrative of events that influenced the study of environmental communication. The first event deemed important is the almost 350 years since William Bradford stepped on land at Plymouth and declared the area to be vile and inhospitable. The narrative traces environmental communication to the present through a number of occurrences, including political activism, literature, and other events. I find it intriguing how the field begins the "history of EC" with European explorers who arrive in what is now the United States and then follow this story through a linear account of important issues that have been shaped by humans. Missing, I noticed, is "nature" and other perspectives, such as pre-Europeans and non-Western histories and perspectives.

Numerous theoretical, methodological, and epistemological approaches to nature-human studies in the communication discipline abound, and areas and topical foci of research are numerous. The subfield historically has centered itself on rhetorical theorizing and public-sphere discourse, with a focus on attempting to understand how

messages communicatively shape human understanding of nature.[23] Though the sub-discipline stems from rhetoric, research also includes post-positivist work, such as quantitative content analyses and survey research (e.g., Werder, 2006), critical pieces (e.g., Rogers, 2007; Rogers, 2008), and ethnography of communication (Carbaugh, 1999; Milstein, 2008).

A number of topical foci present themselves in research that centers on communication and nature-culture relations. Some work combines nature and popular culture, such as an examination of Hallmark greeting cards (Rehling, 2003), *The Simpsons's* television show (Todd, 2003), and agrarian myths in Hollywood films (Retzinger, 2003). Other researchers have examined strategies used by environmental and stakeholder groups (Lange, 1990; Norton, 2007; Toker, 2005), print media (Griffin & Dunwoody, 1995), Internet use (Good, 2006; Scharl, 2006), media and advertising discourse (Anderson, 1997; Hendry & Cramer, 2005), nuclear discourse, campaigns, and issues (Hamilton, 2005; Kinsella, 2005; Pezzullo, 2006) recycling behavior and trends (Werder, 2006), intersections between animals and humans (Milstein, 2008; Sowards, 2006) and studies that analyze environmental movements and texts (Peeples, 2005; Willard, 2007). Moreover, another emerging area examines socio-environmental change and applied social justice, although some scholars within communication argue that the

[23] The inaugural issue of *The Environmental Communication Yearbook* also helped set the tone for a focus on rhetoric. Of the 12 articles, 10 are rhetorical pieces or case studies while two utilize quantitative methods. That scholars have primarily positioned and accepted rhetoric as the *de facto* method is evident in Cox's (2006) definition of the subfield: "The pragmatic and constitutive vehicle for our understanding of the environment as well as our relationships to the natural worlds; it is the symbolic medium that we use in constructing environmental problems and negotiating society's different responses to them" (p. 12). One reason why the subfield stemmed from rhetoric is because several key primogenitors (such as Robert Cox, Craig Waddell, Christine Oravec, M. Jimmie Killingsworth, and Mark Moore, to name only a few) have academic training, backgrounds, and positions in rhetoric. These pioneers were trained in classical rhetorical theory and methodology first and then expanded that framework to the topic of nature.

communication field appears sluggish in making this move (Cox, 2007; Peterson, Peterson, & Peterson, 2007; Senecah, 2007). Regardless of the theoretical, methodological, and topical approach, communication and nature-culture research is quickly gaining legitimacy in communication.

Mediating Nature-Human Relations

One emerging approach to communication and human-nature relations holds that how humans communicate about the natural world simultaneously impacts, determines, and *mediates* human-nature relations; mediation is not just about how humans communicate but also about how nature speaks (Carbaugh, 2007; Cox, 2007; Milstein, 2008; Rogers, 1998).[24] The fundamental contribution of the mediation framework is that it breaks from the purely human communication realm by including nature's communication as a mediator of human-nature relations. Cox (2007) illustrates the notion of mediation in his first tenet of environmental communication: "'Environment' imbricates material and social/symbolic processes … Our ideas, beliefs, attitudes, policies, and practices involving the natural world and environmental problems are mediated by systems of representation by human communication" (p. 12). Carbaugh additionally calls on engaging the natural world through environmental co-presence and as a co-participant. In an elaboration of mediation, Milstein (2008) notes the benefits of researching from this perspective:

> This approach follows theories that assert humans produce, reproduce, and resist both perceptions and praxis of nature through communication. Such a line of questioning acknowledges the role of power in the human-nature relationship in

[24] Here, "mediate" is not to be confused with the practice of dispute resolution or negation, nor does it refer to media-related studies.

> that humans have the opportunity to frame nature to evoke certain meanings, and these meanings, in turn, mediate environmental understanding and material practices. In addition, the use of the term "mediate" opens exploration to processes. (p. 174)

Essentially, humans derive meaning about nature through communication, and this meaning influences environmentally related conceptualizations and behaviors or mediates human-nature relationships.

Mediation as an approach is useful in this study for a number of reasons. While my approach in this project includes the ways in which humans construct nature, it also incorporates the notion of environmental co-presence, where nature is perceived as "speaking" and engaged in conversation with humans (Carbaugh, 2007). The perspective that nature communicates alongside humans helps reinsert agency—"agencies that are not exclusively human" (Mitchell, 2002, p. 30)—that can be missing from social construction arguments. As Mitchell argues, social sciences can position nature as a passive non agent that is external to humans. Making the shift to simultaneously consider construction, discourse, mediation, and the dynamic intersection of human-nature relations helps address limitations of agency.

Therefore, in addition to examining human social constructions of nature and what they produce, this study explores how nature mediates communication. This approach places nature itself not as an object (or context) of study but as a constituting and mediating force. Mitchell (2002) notes that the natural and social worlds mix and interact in multifaceted ways and illustrate the complexity of human-nature relations. In the North Carolina Educational State Forest sites, numerous social, political, economic,

technological, and historical elements coincide and interact—colonization by Spain and Britain, U.S. American independence, tobacco, slavery, timber production, textile industries, and power and electric companies combine to form extremely complicated and intersected relationships. Yet, in addition, situating nature as "an integrated and dynamic communicatory participant" (Milstein, 2009a, p. 347) works to avoid the silencing of nature that is present in much social science research (Mitchell, 2002).

Environmental Communication Studies Informing this Project

Several studies within the field of communication and nature-human relations particularly inform this project. A number of these projects already have been discussed in previous parts of this literature review, yet it is important to mention several more here. Carbaugh's (2001) "The Mountain and the Project" uses observation, interviews, and textual analysis to explore nature-culture issues. Carbaugh analyzes communication surrounding a development project in a state reserve in Massachusetts. He discovered that various discourses were used to conceptualize the space, where locals used either "the mountain/up there" or "the project" framings that influenced either ecological or economic repertoires in conceptualizing the area. Moreover, in another study, Carbaugh (1999) explores the senses of hearing and listening and argues that among the "Blackfeet," a special form of physical and spiritual listening is used to position the body in a space and place.[25] This notion transcends the physical sense of hearing and creates a cultural sense of "dwelling-in-place" to construct nature in a specific way. This process

[25] Important to point out is that Carbaugh's notion of "listening" is specifically Blackfoot and stems from one tribe member's communication with Carbaugh. When I evoke and incorporate Carbaugh's notion of "listening" throughout this study, I am also using an indigenous person's teachings as interpreted by Carbaugh.

"constructs" nature in a way that often differs from Eurocentric beliefs of (not) listening to the natural world.

Rogers's (1998) work on constitutive theories also informs my project and is important to this study in that it similarly evokes the notion of mediation. Rogers uses Nietzschean philosophy and ecological feminism to argue that scholars in environmental communication need to conceptualize the ways in which nature-culture issues "are not simply enabled by certain discourses but are themselves discursive" (p. 246). Rogers notes how constitutive theorists such as Burke and Fiske are descendents of an objectifying Kantian epistemology and Aristotelian gender politics. Rogers argues that the discursive and the material—that humans both symbolically classify and materially practice—are an inseparable duality. Nonhuman material and "natural" conditions are often ignored by those who call for both the symbolic and the material. While choosing the symbolic in the nature-culture binary may enable political benefits (such as exposing oppressive systems and how they are created), it also often positions the natural world as "something that is passive and malleable in relation to human beings" (p. 244). This study is a kind of theorizing that comes not from escaping from idealism to materialism and privileging one side of the nature-culture binary but from realizing its very instability and being more inclusive of nonhuman entities.

In sum, a number of issues and studies are central to nature-culture studies within the communication discipline. While situated within the field of communication and nature-human relations, this research project attempts to extend communication research by providing a study that further incorporates theories within communication.

Consumer and Commercial Appropriations of Nature

Like the social construction of nature and communication and human-nature relations, consumer appropriations of nature comprise an interdisciplinary body of research that informs nature-culture theorizing in this project. While this area often is situated in the communication discipline, it simultaneously is explored in other disciplines. Environmental issues and theorizing as they are examined in this area in the United States are directly related to a prevailing master narrative that centers on an economy whose success depends on hyper-consumption habits. The construction of nature allows "nature" in sites, such as educational states forests, to be "consumed" in a number of detrimental ways. I seek to understand how nature is constructed in the NCESF sites and how consumption mediates how nature is internalized, perceived, used, and acted upon.[26]

Scholars examine how cultural and economic practices promote commercial conceptualizations of nature, including consumerism and commodity culture. Broadly speaking, capitalism and consumerism encourage people to understand nature though consumption. Progressive myths from westward expansion ideologies (via manifest destiny ideology, frontier myths, colonial land grants, and environmental legislation) have made commercial representations of nature difficult to contest. Like virtually anything in consumer-based cultures, nature can be morphed into a commodity; the more

[26] There remains a distinct link between consumption and environmental issues in the United States and, increasingly, worldwide. A "manufacture-consume-waste" cycle permeates the way most U.S. Americans live; waste generated from this lifestyle contributes to environmental degradation. Consumption of scarce and often volatile natural resources and social and political fallout influenced by this consumption are rampant in news reports and in the lived realities of many. Whether it be pollution caused by production and coal-burning and nuclear power plants and transportation, bulging landfills containing the remnants of waste, or homes and businesses stocked with obsolete items, most U.S. Americans live their lives "consuming" and then discarding a great deal of "nature." How many U.S. Americans feel about environmental issues is therefore influenced by how nature often is appropriated in commercial and consumer ways.

nature is molded to ensure uniqueness among other goods, the better it can be sold (Marx, 1986; Rogers, 2006a). As Price (1996) notes, "We approach the natural world, just like everything else, instinctively as consumers" (p. 198). Consumerism relies on the presence of objects and ideas that humans can appropriate, possess, exchange, and consume; things in nature—such as land, trees, and symbols—are included.

Economic and cultural practices also promote the "cultural consumption" of nature (Lutz & Collins, 1993; Pratt, 1992). Internalizing environmental messages can form and reinforce cultural identity whereby nature is consumed as meaning. Cultural consumption continues today as memorialized "environmental" sites, such as national parks, become places where individual, local, and national consumer identities are constructed, imagined, and performed.

Environmental consumerism and commercialization is a growing area of scholarly investigation that includes examinations of green advertising and environmental merchandising (Benton, 1995; Corbett, 2003; Opel, 1999; Price, 1996), corporate greening (Price, 1996), and environmental marketing to children (Dobrin & Kidd, 2004). Nature and eco-tourism are core areas of emphasis—from "toxic tours" (Pezzullo, 2007) to Cajun swamp tours (Wiley, 2002) to whale watching tours (Milstein, 2008). Scholars analyze commercialized messages of nature are analyzed in nature theme parks (Davis, 1996) and wildlife and animal tourism (Bulbeck, 2005). The marketing, selling, and consumption of pro-environmental and anti-consumer messages and campaigns (Hendry & Cramer, 2005; Prelli & Winters, 2009; Werder, 2006) and how environmental advocates use consumerism in commercial rhetoric and green marketing (King, 1995; Meister, Chamberlai, & Brown, 2006; Slawter, 2008) are additional areas of study.

Business and commerce influence how people produce, appropriate, and commercialize nature. Commercialized versions of nature are evident in business ventures, such as Price's (1996) examination of how The Nature Company and shopping malls encourage people to think about nature by consuming it in order to preserve it. Theme parks such as Disney (Cypher & Higgs, 2001; Zukin, 1991) and Sea World (Davis, 1996) are other examples.

This research also exposes an issue regarding whether or not environmentalism can be attained through commercialism. Benton (1995) and Davis (1996) point to the contradiction of consuming as one cause of environmental degradation and then promoting environmentalism through the very act of consumption, such as environmental merchandising. Marafiote (2008) noted how, in the context of commodification and consumerism, groups like The Wilderness Society must garner public support for pro-environmental initiatives while not implicating commodity culture—and the supporters themselves—as the very causes of the environmental degradation. Dauvergne (2008) notes this paradox in recycling habits: "Curbside recycling in many cities uses trucks to collect discarded goods and factories to sort and clean them, requiring both money and energy while also producing pollution" (p. 220). Slawter (2008) argued that pro-environmental movements like TreeHuggerTV can provide a forum for pro-environmental consumption practices. Yet, critiques counter that, while companies, advertisers, and media attempt to promote green messages and images, most do so without actually addressing real environmental benefits (Banerjee, Gulas, & Iyer, 1995)

Government promotes consumer notions of nature through the creation and marketing of public "environmental" sites. In the United States, public hearings,

publications, places, and official discourses are influential in shaping environmental topics (Sack, 1986). Government influences how parks (Ali, 2002; Denzin, 2004; Oravec, 1981; Taylor & Caldarelli, 2004; Weaver, 1996), monuments and memorials (Blair, Dickinson, & Ott, 2010; Gallagher, 1995), museums (Dickinson, Ott, & Aoki, 2006; Zagacki & Gallagher, 2009), and wildlife refuges (Sovacool, 2008) are constructed and understood. By gaining public access and enacting legislation, government officials are particularly powerful in their ability to mold environmental messages. For example, Wolfe (2007) shows how, in an environmental policy address, President George W. Bush used security to discursively sidestep public environmental controversy. Moreover, governmental agencies like the National Park Service play an important yet discrete role in consumerism. Weaver (1996) uses the term *benevolent capitalism* to show how the Great Smokey Mountains National Park promoters advocated tourism and commercial ventures versus mineral and lumber extraction to promote preservation. In places like educational state forests, tourism, timber extraction, and forest management are important industries.

By "consumption," then, I do not only mean the physical use of materials found in the natural world. I also use "consume" to mean how humans come to internalize nature in ways that influence perceptions and relationships. This includes the intersection of deeply held cultural ideologies that get at the heart of consumption-based psyches (White, 2007). That humans "need" things to consume is an artificial need posed as being natural but is actually a myth encouraged by capitalism. A sense of fulfillment becomes empty and impossible to obtain, where, in the context and history of capitalism and an enduring sense of restlessness, humans must move on to the next item and the next place,

hoping to find happiness in other forms of consumption. In sum, this research area examines the relationship between environmental issues and economic and consumer practices. This project attempts to articulate further this nature-economic interconnectedness in the case of educational state forests, where consumption is central to the development, maintenance, and promotion of forestry.

Public and Commercial Intersectionality

In a consumer context, by promoting a particular essence, government and commerce influence how humans conceptualize "environmental" sites (Sack, 1986; Weaver, 1996). A bleeding between public and private interests allows commerce to draw from governmental framings—and vice versa—to encourage people to think about nature in a consumptive way. Davis (1996) suggests that corporate sites such as Sea World use rhetorics of public education and environmental protection to style themselves as public facilities. Although the Busch Entertainment Company runs and manages Sea World as a highly commercial site, it depicts itself as a public service through environmental education and conservation programs. Opel (2003) names this blending the "erosion of the boundaries between the public and private" (p. 36), and Davis expresses that this "commercial confusion of retail space with public space" (p. 506) is becoming increasingly popular in commercial venues.

One example can be found in public parks. Monuments, parks, and areas associated with the National Park Service (as well as state parks) often are perceived as an ideal and democratic way to protect nature from ill-intending landowners, developers, companies, and commerce. Yet, as Weaver (1996) showed in an examination of the campaign to create the Great Smokey Mountains National Park, while park proponents

may have noble intentions, protectionism can come at a price. While park promoters and public agencies typically are depicted as vigilant protectors of nature and land for the sake of the public good, Weaver helped uncover more complicated commercial and cultural implications of the process. Consumer appropriations of nature—space, land, forests, and trees—are deeply embedded within articulations of environmental places, where government and developers reconstruct representations to promote commercialized notions of nature.

Environmental Education

In addition to consumer appropriations of nature, a rising body of research examines environmental education (EE) issues, where a number of factors influence how, in educational systems, children learn to conceptualize nature. In this section, I first describe EE legislation, as it greatly influences and contextualizes what is taught and researched in EE sites such as the one I examined. Next, I describe a number of themes in EE research that inform this study.

Environmental Education Legislation

Before turning to the extant academic EE literature that informs this project, it is important to examine the cultural and political histories and policies of EE. What is taught on EE sites often is bound by governmental (federal, state, and local) acts, laws, legislation, and regulations, which have had a profound impact on how students conceptualize the natural world that adults teach to them. As Delaney (2001) argues, law is a culturally significant space wherein "nature" is produced, notably in a way that maintains the nature-human split. As Delaney notes, "Because the meaning of 'nature' is often a function of its contrasts with the category 'human,' to participate in the

construction of one is, almost by definition, to participate in the construction of the other" (p. 487). Laws that frame and govern EE have deeply influenced what is taught on EE sites.

To provide a brief history of EE legislation in the United States, the *Elementary and Secondary Education Act of 1965* (ESEA) was the most wide sweeping federal statute that funds primary and secondary education in the United States. It was recently reauthorized into the Bush administration's controversial *No Child Left Behind Act of 2001* (NCLB). The act oversees funding, development, materials, and curricula for education, including for EE. Additionally, the *National Environmental Education Act of 1990* (NEEA) first was signed into action by President Richard Nixon in 1970 and then repealed in 1981. Reintroduced in 1990 and now called *The National Environmental Education Act of 1990* (NEEA), it authorizes funds from the Environmental Protection Agency to fund EE programs and ventures.

Spurred and supported in part by Louv's naming and discussion of NDD, the recent *No Child Left Inside Act of 2009 (NCLI)* attempts to amend and modify the NEEA. NCLI is supported by a vast coalition of groups who argue that the narrowing of curriculum under NCLB (e.g., less EE, social studies, outdoor activity, arts, recess, and fieldtrips) to make way for standardized testing has combined with other social problems to increase environmental alienation. Numerous researchers support this assessment, such as Gruenewald and Manteaw (2007), who argue that NCLB has decreased non-needs-based testing curricula to the detriment of EE. The NCLI movement touts place-based education as a way to address social ills, such as childhood obesity, behavioral and

attitudinal issues, environmental separation, and a decrease in unstructured outdoor play, and is even praised for increasing academic performance.

NCLI's argument is that children are spending less time outdoors, are engaging in less physical activity, and have increasingly sedentary lifestyles. NCLI charges NCLB with perpetuating these issues, and, if passed, NCLI would provide incentives for schools and educators to increase the time students spend outdoors. NCLI especially calls for the placement of qualified EE teachers in classrooms and strengthens and provides funding for environmental literacy and sustainability programs. In addition, Gruenwald and Manteaw (2007) argue that, through pressure to change what is taught, NCLB has created a rift and paradox between schools that promote EE but are not federally encouraged or supported to do so. To fit within these strict NCLB confines, EE has aligned itself with science to be a "legitimate" and "neutral" way to teach children about environmental issues. In fact, the NEEA, ESEA, NCLB, and NCLI all have strong science-based curricula. For example, NCLI uses science terminology when it notes that the purpose of EE is to promote "scientifically valid research" that relies on validity, reliability, and replication. Scholars such as Korfiatis (2005) explore the infusion of a modern scientific perspective into EE curriculum. Korfiatis (2005) notes the dominating yet often uneasy relationship between modern science and ecology as approaches to EE curriculum. These national and state curricula are important in framing what is taught at the NCESF sites.

Environmental Education Research

EE research is a mostly located within the education field, but it is beginning to expand into other disciplines. In a survey of EE literature, a number of research themes emerge that examine how nature-culture issues are taught to youth. The themes most

relevant to this study and examined here include a predominant methodological dependence on quantitative work, the experiences of students and learners, issues of culture, and emerging critical EE research.

While EE research is beginning to include more qualitative and critical work, it is largely dominated by quantitative approaches (Smith-Sebasto, 2000). The use of quantitative methods in EE is not necessarily surprising, given that educational research mostly utilizes the same approach. Post-positivistic EE research that uses quantitative methods includes an examination of topics such as how cognition and thought processes influence children in EE (Heimlich & Ardoin, 2008; Johnson & Manoli, 2008) and how parents and family members influence children's understanding and treatment of the natural world (Ballantyne, Connell, & Fien, 2006).

In addition, a post-positivistic genre of EE research examines the impacts and effectiveness of curricula and educational techniques. Scholars examine various educational and communication models that are applied in EE contexts (Heimlich & Ardoin, 2008). For example, to illustrate a common EE research technique, Johnson and Manoli (2008) devised an instrument based on Bogner's Environmental Perception scale to study the effects of the Sunship Earth program on the environmental perceptions of fifth and sixth-grade students in the United States. Studies such as these are commonplace, where scholars use a theoretical model and quantitative measure to assess the outcomes of a particular EE project or setting. These studies measure educational practices and outcomes without necessarily questioning their assumptions.[27]

[27] Assessing EE educational materials, textbook, and curriculum is another area of research. In one study, the visual and textual elements of educational brochures were assessed, illustrating that environmental materials can influence (either enhance or hinder) interest in various issues (Young & Witter, 1997). Chenhansa and Schleppegrell (1998) similarly analyzed the linguistic features used in

EE research also studies the learner/student in EE contexts. Child agency within EE sites (Blanchet-Cohen, 2008) and children's perceptions of nature (Wals, 1994) offer insight into how students react to and frame nature in EE contexts. For example, Rickinson (2001) points to a body of research that illustrates how students experience environmental learning in ways that can diverge considerably from those of their teachers. Other studies examine learners and the process of learning in schools for K-12 students, such as learners' environmental knowledge, attitudes, behaviors, learning outcomes, and how students understand environmental phenomena (Rickinson, 2001).

Next, researchers investigate EE pedagogy and practices in various "cultural contexts." These studies mostly rely on EE topics within the frame of the nation state, such as in the national contexts of New Zealand (Eames et al., 2008), Turkey (Alp, Ertepinar, Tekkaya, & Yilmaz, 2008), England (Agyeman, 1998), Kenya (Ali, 2002), Jamaica (Ferguson, 2008), Zimbabwe (Van Petegem & Blieck, 2006; Van Petegem, Blieck, & Van Ongevalle, 2007), South Africa (Lotz-Sisikta & Schudel, 2007), Scotland (McNaughton, 2007), and Malaysia (Aini Mat, Yahaya, & Ahmadun, 2007), to name a few. For example, Ali (2002) examined how students understand the social contexts and implications of parks and wildlife in Kenya, while Alp, Ertepinar, Tekkaya, and Yilmaz (2008) investigated Turkish elementary school students' environmental friendly behaviors. Also using nationality as a variable, some studies offer cross-cultural comparisons, such as Van Petegem and Blieck's (2006) examination of Zimbabwean and Belgian children; they conclude that Belgian children believe in "human–nature equality," whereas children in Zimbabwe "feel more dominant over nature and emphasize

---

EE texts and found that students typically focus on concrete points rather than abstract points within them.

a utilitarian view of the environment" (p. 625). In addition, EE beliefs and practices in "urban" nature settings are also studied (Agyeman, 1998; Wals, 1994). Agyeman (1998), for example, argues that teachers in one urban EE context tend to present ideas based on traditional ecological values, theories and practices that were originally developed for rural, not urban environments.

EE studies that focus on culture are predominately post-positivistic in their approaches, positioning culture and gender as variables. However, some exceptions exist. For example, Nuyen (2008) argues that Confucianism, a spiritual perspective committed to the idea that the environment has a value that is independent of humans, can have positive implications if incorporated into EE practices. In a discussion of Judeo-Christian theology and the environment, Hitzhusen (2007) argues the importance of reconsidering Judeo-Christian ecotheology as a means of better incorporating values to create an environmental ethic within structured EE contexts.

Last, a number of critical and qualitative studies are beginning to emerge within EE research, and they significantly inform this project. Critical projects question the assumptions of many EE practices and call for change. For example, Bowers (2002) argues that educators can incorporate non-commodified conceptualizations of human-nature relationships into EE curriculum; teachers need to begin understanding how institutional EE curriculum is organized in ways that obscure environmental racism and the marginalization of different cultural perspectives that fall outside of modern technology and consumerism.

In particular, critical studies question place-based EE research and practices. Gruenewald (2008) works from the position that critical pedagogy and place-based

education are mutually supportive educational traditions that need to be blended into a "critical pedagogy of place" to begin to decolonize EE. Such an approach can challenge teachers to reexamine traditional EE practices and approaches. McKenzie (2008) agrees and conceptualizes collective youth engagement as a way to develop a deeper connection to place within EE. Yet, Bowers (2008) argues that a "critical pedagogy of place" is similarly problematic because the combination of critical pedagogy with place-based EE is an oxymoron. Bowers notes instead that culturally informed senses of place should incorporate different approaches to nature that fall outside of Western ideological constructions of pedagogy and place, which typically assume a teleology of progress and change. A critical genre of EE research is beginning to deeply question the ideological roots and assumptions that guide institutionalized EE practices and call for new educational tools that interrupt this way of teaching.

Throughout this chapter, I have provided an in-depth look at four conversations and extant bodies of literature in which this study is situated: a) the social construction of nature; b) communication and nature-human relations; c) consumer and commercial appropriations of nature; and d) environmental education. I have provided these research areas to explore what has been studied and the relationships of this literature to this project. Combined, these discussions offer a number of ways to see, experience, know, and study how nature-human relationships are framed.

CHAPTER THREE: METHODS

Guba and Lincoln (1998) argue that questions of method are secondary to questions of paradigm. Therefore, the tools I use are guided by my methodological questions, which are contingent upon philosophical assumptions (Saukko, 2003). In this project I conceptualize qualitative research as "characteristically exploratory, fluid and flexible, data-driven and context-sensitive" (Mason, 2002, p. 24). I devised an array of qualitative methods of data generation and collection using various sources. A mixture of data sources (places, sites, people, situations, organizations, texts, artifacts, events, and phenomenon from which I gathered data) and data-generation methods (techniques and strategies I used to generate data) gave me a rich body of data (Strauss, 1987).

In what follows, I first describe the methodologies that underlie each data type. Second, I describe the specific details of the data that was collected within each data collection genre. Last, I overview the data analyses methods I used, namely a grounded-theory approach (Strauss, 1987) that incorporates generative rhetorical criticism (Foss, 2009) and methodological processes outlined by Emerson, Fretz, and Shaw (1995).

Data Collection Methodology

There are four genres of data generation and collection in this project: a) an observation of the lessons; b) a participant observation of the sites; c) interviews of forestry officials; and d) a textual analysis of texts and artifacts. Each of these methods has allowed me to address my research questions, helping me identify how humans make sense of, construct, and resist human-nature relationships in the sites.

Observation of Lessons

I was simultaneously an observer and participant-observer in the sites, both of which hold similar methodological tenets. The ranger overseeing my role at the primary research site where I was based[28] was open and supportive about my desire to spend time observing the lessons. In my role, I came into the primary research setting with an explicit and recognized investigative purpose. Observing and participating often are associated with broader ethnographic approaches, but a researcher need not conduct an ethnography to use them (Mason, 2002), and I worked from this central tenet. Observing and participating in this way allowed me a first-hand experience of knowledge that was situated in a setting.

Participant Observation of the Sites

Participant observation involves the specific methodological practice of being in the presence of others for a continued period of time as a partaker of their world (Lindlof & Taylor, 2002). Throughout my participant-observer role, I incorporated the writings, techniques, and recommendations of Bernard (2006), Emerson, Fretz, and Shaw (1995), Frey, Botan, Friedman, and Kreps (1992), Kirk and Miller (1986), Lindlof and Taylor (2002), and Mason (2002) to guide me through the process. I strove to be as open as possible from the beginning about my research interests and my role as a student so that people understood why I was taking notes and asking questions. As a participant observer, I did not attempt to be a fly on the wall; it was not my intention to be neutral, detached, or an outsider (Emerson, Fretz, & Shaw, 1995). I did not view my participation in any way as "contaminating;" instead, participating meant I performed and engaged in activities and roles.

[28] I explicitly do not name my primary research site to provide the rangers anonymity.

I chose participant observation in this study for a number of reasons. First, interactions, actions, and behavior, including daily routines, conversations, language used, styles of behavior, non-discursive elements, and the setting itself are central to the production and communication of meaning. Participant observation allowed me to collect multiple kinds of data to interpret meaning (Bernard, 2006). Second, knowledge of human-nature intersections can be produced by observing and partaking in the actual setting where communication takes place (Mason, 2002). This allowed me to decrease the issue of reactivity, or changed behavior, often induced in artificial situations where people know they are being researched (Bernard, 2006). While I could not avoid this altogether, my intent was to become less of a curiosity as I spent time on the sites.

Observing and participating enabled me to explore complex social explanations with "depth, roundedness and multidimensionality" (Mason, 2002, p. 86). I saw myself as active and reflexive in this research project; I was not "standing outside" of this research, and participant-observation methodology helped me become involved in the lives of those I researched. Ultimately, I attempted to gain more of an intuitive understanding of how meaning was constructed (Bernard, 2006).

Collection of Interviews

Interviews offer insight into people's knowledge, views, experiences, perceptions, and meaning systems. In this study, I chose interview methods to explore how individuals who work in and manage the sites conceptualize them. Interviews allow "depth, nuance, complexity and roundness in data" (Mason, 2002, p. 65) that are crucial in addressing research questions.

I used a variety of interview methods and suggestions, such as those offered by Briggs (1986), Goodman (1961), Lindlof and Taylor (2002), Madison (2005), and Mason (2002). Interviewing is "predicated on the idea that interview talk is the rhetoric of socially situated speakers" (Lindlof & Taylor, 2002, p. 173). There are often repercussions in not addressing the complexity of interview methodology (Briggs, 1986). For this reason, I collected information from interviewees in a way that spoke to larger patterns of thinking, feeling, and speaking, and was not decontextualized (Briggs, 1986). To find participants to interview I began with the method of "snowball" sampling technique (Goodman, 1961), which involved identifying and interviewing participants in the field who then referred me to possible future participants to interview.

I structured interviews around clusters of questions that were used in different ways for various participants. To generate interview questions, I incorporated "The Patton Model," which uses six genres of questions (Madison, 2005). First, questions about behavior or experience investigated ways of "doing," such as the question, *"I notice many children are drawn toward playing on the square concrete slab by the bathrooms when they arrive for their lesson. Can you describe how children come to a forest setting but may find it difficult to step outside of their typical behaviors?"* Second, opinion or value questions asked about judgments, beliefs, or assessments about a phenomenon, such as: *"In your opinion, why do children behave in this way? Why are they attracted to the concrete slab to play?"*

Third, feeling questions attempted to examine emotions, sentiments, and passions, such as: *"How do you personally feel about this behavior?"* Fourth, knowledge questions addressed information and learning, such as *"What are the norms in a non-forest*

classroom setting that influence this behavior?" Next, sensory questions pointed to human senses, such as: *"How do you think the children might feel when they go to play on the concrete versus in the forest?"* Last, background/demographic questions examined practical information, such as: *"What is the percentage of children that you typically see huddling on the concrete slab?"* In addition, I asked questions that gave insight into how actors conceptualized and made sense of human-nature relationships in the sites, including asking people to tell a story about this site and asking for metaphors.

Collection of Texts and Artifacts

Texts and artifacts help to uncover formal, official, public, and legal expressions of ideologies and meanings and how they influence the day-to-day lives of people. Such texts and artifacts can include brochures, pamphlets, handbooks, legal documents, and Web pages. Various laws, regulations, and statutes are important in revealing the role of law in producing meaning systems (Delaney, 2001). Legislation and law are influential in what gets taught on the sites, and for this reason they were a focus. I also investigated the types of federal, state, and local educational curricula that shape what is taught in the classes and guidebooks, textbooks, and other educational material that educators use to teach. Combined, these texts and artifacts allowed me insight into how various concepts were framed. Because many of these texts are made for the public, they enabled me to see how the forest service and other entities rhetorically framed the sites and their educational endeavors.

The Use of Fieldnotes

Writing, transcribing, and coding fieldnotes were an important form of data collection in this project. I followed the procedures and recommendations from Bernard

(2006), Emerson, Fretz, and Shaw (1995) and Lindlof and Taylor (2002). I kept detailed fieldnotes, a daily log, a written list of profiles of people I met (rangers, teachers, parents, interviewers, and officials), and a glossary to record unfamiliar terms (Bernard, 2006).

While taking fieldnotes, I began by recording initial impressions, including: senses (tastes, smells, temperature, sights, and sounds), aspects of the physical setting (size, shape, noise, color, objects, and feelings), equipment, movement, and people (numbers, gender, race, appearance, dress, movement, comportment, and feelings evoked) (Emerson, Fretz, & Shaw, 1995). I documented actions, interactions, events, talk, gossip, emotional responses (not why emotions occurred but how they were expressed), issues, and problems. I noted nonverbal elements, including body posture, and the mood, rhythms, tones, and paralinguistic features of voice. Also important were attributes of language, including active verbs, sensory adjectives, and verbatim statements and utterances along with accompanying gestures and facial expressions. I tried to avoid categorizations or labels, including not using labels to stand for a description (though I did make any judgments or observations explicit in written asides) (Emerson, Fretz, & Shaw, 1995). Last, I generally did not speak with anyone about what happened until I typed the fieldnotes each evening (Bernard, 2006; Emerson, Fretz, & Shaw, 1995).

As part of my fieldnote procedure, I followed several general processes. These included: a) using as much verbatim quoting as possible, using quotations marks to guarantee a direct quotation; b) being honest about my role as a researcher from the beginning; c) collecting and writing down more than I thought I needed, especially in the beginning, which meant taking notes on everything and collecting any artifacts to have on

file to analyze later; d) making sure to take notes on how I, as the researcher, was framing my questions to people on site; e) being respectful of people and their meaning systems; and, f) enjoying myself and remembering this work is fun (Emerson, Fretz, & Shaw, 1995; Milstein, personal communication, October 10, 2008 and December 4, 2008).

Last, when writing and coding, I used a number of notes. Observational notes were descriptive notes from watching and listening and were abbreviated as "ON." Theoretical/analytical notes laid out ideas and theories and were abbreviated as "TN." Methodological notes detailed any techniques and issues in data collection and were abbreviated as "MN." These labels helped me differentiate and detail the types of notes I was producing (Emerson, Fretz, & Shaw, 1995; Milstein, personal communication, October 10, 2008 and December 4, 2008).

Description of the Data

From March to August 2009, I spent approximately five months both on and off the sites, amassing a variety of data. Again, while most of my participant-observation role took place in one educational state forest locale, I traveled to all six sites across North Carolina to collect data. During these trips, I took fieldnotes, video and audio recordings, and photographs to record the sites, and I interviewed rangers and other forestry personnel.

In my observation and participant-observation roles, I gathered more than 200 single-spaced typed pages of fieldnotes of observed communication practices. Additionally, I recorded and transcribed more than 135 single-spaced pages of transcripts from the various talking trails across the sites. I conducted and analyzed 12 in-depth interviews with rangers and officials, each interview averaging one-and-one-half hours in

length. Last, I collected hundreds of artifacts, such as pamphlets, educational materials and literature, curriculum documents, and forestry materials. In addition, I personally took over 1,100 photographs across the six sites. Below, I provide more specific details of each type of data.

Observations

In my observational role, before becoming an active participant-observer, I spent several weeks at my primary site observing all aspects of the setting, people, and classes, including the rangers' daily activities. I made this move to situate myself and take notes before I become more immersed in the setting (Emerson, Fretz, & Shaw, 1995). In this two-week observation period, and while observing the classes throughout the duration of the project, I only watched and did not participate.[29]

In my observation role, I documented that I observed approximately 700 children receiving lessons at two educational state forest sites. While my observations were primarily in one location, I happened upon a lesson at another site while visiting. In addition, through my primary site, on several occasions I traveled with the rangers off site to observe classes they taught, including at an elementary school, a location owned and operated by the U.S. Army Corps of Engineers, a county park, and a state park. I observed approximately forty classes; the smallest class contained five students, and the largest eighty.[30] On average, the classes contained between twenty and forty students

[29] In order to participate with the children, as per IRB regulations I would have been required to have each child sign assent forms as they arrived at the site, on top of previously signed parental consent. As I encountered hundreds of children, this was not feasible for this project. I do, however, see interviews with children as an element of future research on the site.

[30] The number of classes I observed was dependent on scheduling. During my time on the primary site, the number of classes was significantly down that year, compared to past years. Rangers hypothesized decreased visits to the site were due to budget cuts. Schools had less transportation funds

each. While I did, on occasion, observe older students (fifth- and sixth-graders), most students were in the first through the third grades. The schools were both private and public. Some groups contained mostly (if not all) White students, while other groups were more diverse and heterogeneous. There appeared to be fairly even number of males and females.

While I observed a total of 12 educators teach lessons, the majority of the lessons that I watched were taught by four forest rangers. I observed a number of different lesson topics, including forest life, tree-growth rings, animals, talking-tree tours, water safety, wildlife, watershed issues, aquatic wildlife, predator and prey, tree identification, bear identification, fire maintenance, wood ducks in North Carolina, reptiles, and paper making.

In regard to the process of observation, I typically arrived on the site early and spent time with the rangers setting up the lessons. I then traveled with the rangers to meet the children, usually on a "gator" vehicle (a golf-cart sized John Deer two-seater utility vehicle that rangers use in the sites). The rangers sometimes introduced me to the teachers as a graduate student conducting research, while other times they did not. When children were split up into groups and guided by a ranger to the open outdoor classrooms, I randomly picked a group to go with. Sometimes I followed the same group through different lessons with different rangers; other times, I stayed and watched the same lesson being taught to different groups.

Participant Observations

(for gas and bus drivers) to make the trips. On days when classes were not planned, I spent time on the site collecting other forms of data.

After several weeks as an observer on the primary site, I then assumed a participant-observer role (while simultaneously continuing my observation of the lessons). I was considered a formal "volunteer," the actual term the supervisor used to name my position. In this role, I assisted and accompanied rangers during site management and maintenance. In addition to participating in rangers' forest management and maintenance duties, I assisted in what the rangers called lesson preparation; set up and clean up; timber barking; timber production (including felling and cutting); cleaning bathrooms and picnic areas; conducting trail work; and paperwork and administrative issues.[31] I also became a participant observer with the site itself. When participating with, observing, and engaging in the site, I concentrated on the layout, spatial features, trails, animal and plant life, and recreation areas. I collected these data by taking walks and spending time in the sites, documenting what I experienced with fieldnotes, sketches, and photography.

As part of my observation and participatory roles, along with experiencing the setting as people do, I also collected data by incorporating alternative ways of perceiving, conceptualizing, and observing the setting itself (Brown, 1986). Many people have a difficult time experiencing and perceiving "nature" outside of an objectivist and teleological standpoint (Brown, 1986), including myself. A number of simple, yet profound ways of perceiving and acting served to open my senses and perceive differently. While on the sites, I practiced clearing my mind of thoughts and analytical activities (including letting go of inhibitions and prejudices), letting go of time and worries, and being quiet and present in place (Brown, 1986; Carbaugh, 1999). I tried to

[31] I did not have the opportunity to participate in the management practices identified as burning, thinning, clear cutting, planting, working with a management plan, or conducting general experiments.

let go of names, as the initial tendency to want to name can lead to a process of objectifying and ordering nature; experiencing without naming can lead to alternative conceptualizations and impressions. I attempted to sense more in the forest settings, including looking at things from new viewpoints, and broadened vision, including "splatter vision" and wide-angle seeing (Brown, 1986). Most important, relaxation, empathy, humility, and shutting down mentally are counter to many typical modern U.S. American notions of space and nature, and I therefore tried to incorporate these practices. Appreciating smells, sounds, and sights in new ways helped me to compare and contrast how actors in the setting engaged with it (Brown, 1986).

Talking Trails

Various talking trails across the six sites were particularly interesting to me, and I concentrated on them as one data source in this project (See Figure 2). In total, across the six forest sites, I documented, audio recorded, and transcribed messages from sixty-one "talking" posts in nine "talking trails," totaling 303 recordings and 135 single-spaced pages of typed transcripts. In some cases, rangers handed me typed transcripts or e-mailed me electronic transcripts of the recordings. In most cases, where electronic or paper transcripts were not available, I personally recorded and transcribed the recordings. In some cases, what was said on the recordings differed from the transcripts I was given. I compared and analyzed both versions during the data analysis.

Figure 2. Talking Trails: Trees, Rocks, and Mules. Images from talking trails on the sites. Top left, a talking-tree trailhead sign. Top right, a talking rock post. Bottom left, a pair of talking mules ("Francis and Elzebra"). Bottom right, a talking tree post; the button to push to hear the recording is located near the tree cartoon's mouth.

In addition to transcribing the "spoken" words of the talking posts and the nonverbal elements of the recordings, I took fieldnotes and photographs of the physical layout and features of the trails. As part of my observational role, I was also able to view rangers taking groups of students on guided tours through several talking-tree trails, giving me the opportunity to observe how students experienced the trails in an instructional setting.

While talking-tree trails existed on all six sites, the trees and messages varied according to region; the trails exhibit trees that are the most common to the site's geographic location. In total, the recordings detailed twenty-six different kinds of trees. While pines and oaks were the most prevalent, other trees included the shagbark hickory, yellow poplar, sweet gum, basswood, and hemlock. In several situations, talking posts were not working due to lightning strikes, moisture, or construction. All of the recordings appeared to be spoken by people using White English vernacular or White North Carolinian accents. Thirty six recordings were made with male voices while sixteen were females (seven were unknown). In most of the recordings, music or nature sounds played in the background during the message; the music was mostly blue grass or regionally inspired.

In addition to talking-tree trails, most sites had their own additional unique talking trails. One site's "forest geology trail" touted itself as "the home of the talking rocks" and featured messages from limestone, granite, gabbro, gneiss, sandstone, diabase, and metarhyolite. On another site, a "Naval Stores Exhibit"[32] featured a talking tarkel[33] and a talking turpentine still. In another location, a "crab creek trail" highlighted a talking Huey helicopter, a talking tractor plow, and a talking fire tower. Another site exhibited a "forest

---

[32] "Naval stores" refers to the materials that are produced from tree resins (e.g., turpentine, pitch, and tar) that are used in building and maintaining wooden ships. Naval stores that came from the American colonies were integral to Great Britain's early naval operations and colonization, and later during the American Revolutionary War. Historically, naval stores have been an important part of North and South Carolina's economies, and this is why North Carolina is known as the "Tar Heel State." Today, naval stores are predominantly derived from sap from pine trees and are used in things such as soap, paint, linoleum, and roofing.

[33] A tarkel is a large shallow pit that was used to turn pine sap into pitch. According to the "talking tarkel" recording, "A large shallow pit, gently sloping towards the center was dug. Next, a small ditch leading to a collection hole was installed. The logs of the longleaf pine then were piled in a spoke-like fashion in the pit, to a height of 10 feet. The logs were next covered with soil and set on fire. As the covering of soil kept most of the oxygen away from the burning logs, the fire burned very slowly. This trapped heat caused the tar to begin oozing out of the logs."

logging history trail" with a talking logging shack, a talking saw mill, and a pair of life-size talking mules, named Francis and Elzebra. Finally, the last site offered an early schoolhouse exhibit with a talking display. The displays all feature life-size structures of what was being represented that were either real or reconstructed.

Interviews and Artifacts

Accompanying the data collected from my observation and participant observation, I conducted 12 loosely structured in-depth interviews with forestry personnel, including rangers, supervisors, personnel, and administrators. Each interview averaged one-and-one-half hours in length. Nine of the interviews were face-to-face, and three were conducted over the telephone.

I asked questions in seven topic areas (see Appendix A for interview guide). Questions were grouped in the areas of: a) EE and educational state forestry; b) site and space issues; c) student behavior while on the sites; d) parent and teacher topics; e) curriculum; f) aspects of learning; and g) personal information and background. While my interview guide contained over thirty-five questions, I followed a loosely structured format, skipping questions and changing the order depending on the participant's flow.

Last, I collected hundreds of artifacts, documents, and texts, such as pamphlets, educational materials and literature, curriculum documents, forestry materials, and photographs that I personally took. In observing the lesson, I also collected and documented a number of teaching materials that were used in the lessons (See Figure 3.) I captured many of these instructional supplies using photography, and on other occasions I made photocopies.

Figure 3. Teaching Materials Used in Lessons. Top left, a flip chart demonstrating how paper is made from trees. Top right, a toy chainsaw used in the "Forest Management" lesson. Bottom left "tree cookies" (cross sections of trees) used in the "Tree Rings" lesson. Bottom right, materials for an "Aquatic Insects" lesson.

Data Analyses

The types of data analyses I employed stem largely from my questions, assumptions, and my stance as a researcher. The data analysis methods I used were grounded theory (Strauss, 1987; Strauss & Corbin, 1994), generative rhetorical criticism (Foss, 2009), and analysis methods detailed by Emerson, Fretz, and Shaw (1995).

Grounded theory positions the analysis as coming from the data. The researcher codes the data for themes, patterns, frequency, and intensity and the analysis then

proceeds from there. Strauss and Corbin (1994) argue that grounded theory is "a *general methodology* for developing theory that is grounded in data systematically gathered and analyzed" (p. 273, italics in original). It is an inductive "*way of thinking about and conceptualizing data*" (p. 275, italics in original). Also called the "constant comparative method," grounded theory is generated by going back and forth between, or "comparing" data, research questions, and analysis. A grounded-theory approach is appropriate for this project because it considers multiple data sources, sees knowledge generation as local and not a priori, and holds that no one data source is given priority (and all are equally considered in comparison to others) (Strauss, 1987; Strauss & Corbin, 1994). Differing opinions exist as to the depth and procedures for using grounded theory; some argue a number of stringent criteria and procedure are necessary while others treat the analytical method as more open and fluid (Strauss & Corbin, 1994). I operate from this latter position.

Second, similar to grounded theory, generative criticism uses rhetorical analysis that the artifact has generated (Foss, 2009). The method incorporates a number of specific rhetorical tools, such as cluster method, frequency and intensity counts of words, images, and themes. Generative criticism analyzes a data set's language, images, and tones. Third, I incorporated specific methodological practices outlined by Emerson, Fretz, and Shaw (1995) throughout the analysis process, as outlined below.

There are advantages to using these three methods to analyze the data. I chose these tools to allow me to derive a certain level of "sophistication" in the data and to go beyond just having an opinion about what a text may infer (Emerson, Fretz, & Shaw, 1995; Foss, 2009: Strauss, 1987). Grounded theory allowed me to simultaneously

examine contexts that create discourses on the sites, the actual language used, various identities and roles held by people, and systems and structures, such as local, state, and federal government and commercial industries (Strauss, 1987). Rhetorical methods allowed me to focus on the texts, including "nature" itself (Foss, 2009). The process outlined by Emerson, Fretz, and Shaw (1995) allowed me to conceptualize how people experience their time on the sites, including their daily rounds of activities, what they find meaningful, constraints and pressures, and how people form social ties.

Procedurally, when combining all three methods to collect, code, and analyze the data, I first used open, analytical, and focused coding to develop and analyze codes and categories that emerged from the data (Strauss, 1987). In this step, I developed and generated broad schemas and themes and tried to pay attention to how members saw and experienced the events (Emerson, Fretz, & Shaw, 1995). Next, I went back and forth between my data and the coding to ascertain whether the schemas reflected the data. Last, after generating, clustering, and confirming the schemas, I chose core schemas that appeared to be the most frequent, connected, striking, and salient to my analysis. Going back and forth between theory, data, and my research questions, I generated and organized the codes and analyses around the theses I explore in Chapters Four, Five, and Six.

In this chapter, I outlined the qualitative research tools I use in this project, and I chose these methods due to their exploratory, data-driven, and context-sensitive nature. In this chapter, I first outlined the methodological tenets that underpin each data type. I then described details of the data I collected within each of four data genres. I ended by providing a description of the data analyses methods I used, namely a grounded-theory

approach that incorporates generative rhetorical criticism and other processes. Using a combination of data sources and methods allowed me to work with a rich and diverse data set.

CHAPTER FOUR: FINDINGS I: ORGANIZING AND CONFINING NATURE

In Chapters Four, Five, and Six, I offer three ways in which rangers, teachers, curricula, and forestry frame and resist environmental meanings across the North Carolina Educational State Forest (NCESF) sites. These chapters are arranged as follows: in Chapter Four I present the first frame—*organizing and containing nature*—to show how people and parties on the sites frame nature as ordered and controlled. In Chapter Five—*producing and using nature*—I analyze how people and parties construct nature as an entity that is created for humans to consume. In Chapter Six—*resisting constructions*—I use examples from the data to illustrate how students and rangers alike question and challenge the dominant framings. In Chapter Seven, I use these themes to form three theses that rearticulate the human-nature binary and point to larger findings and implications.

In the three analysis chapters, I analyze data from: (a) fieldnotes; (b) talking-post recordings and transcripts; (c) artifacts and texts; and (d) 12 in-depth interviews with rangers and forestry officials. While I reserve broader conclusions until the discussion and conclusion in Chapter Seven, at the end of Chapters Four, Five, and Six, I summarize by discussing how these schemas produce, function, and are instrumental in creating meaning in nature-human relationships.

In this chapter, I discuss the first framing of nature that became the most dominant framing I observed on the research sites. Nature primarily is presented through the lens of a logical ordered reality, separate from humans, and then organically structured around systems of logic and reason. There is an organization to nature, where entities, specifically trees, are understood to make sense. In the entrances to two state

forest sites, trees are even planted in straight rows, illustrating order and containment (See Figure 4). That nature is set to the tune of an analytically contained order appears to be a taken-for-granted logic for those on the sites who adhere to this framing.

Figure 4. Nature as Organized and Contained. Trees planted in rows at two state forest entrances.

People (rangers, teachers, students, parents, chaperones, and forestry officials) and parties (the forest service, the educational state forests, curricula, and educational institutions) actively frame and construct nature in the following ordered and contained ways: a) scientific; b) named and identified; c) managed; d) gendered; e) a physical place; f) disciplined; g) competitive; h) different; and i) predominately focused on sight (ocularcentric). Together, these framings illustrate how people and parties conceptualize not only what nature is, but the most ideal ways for humans to perceive and relate to it.

Before moving to the first theme within this first framing, I offer a general example illustrating the predominant notion of ordering that came when I observed a ranger teach a wildlife management class. I begin with this example because it illustrates the pervasiveness of nature as ordered. The ranger began the lesson with the questions: "As people we like to group things together, don't we?" and "You organize things? Yeah, I think you do?" After the ranger depicted order as normal and ideal, the ranger told the students: "I bet at your homes, all of the food is in the kitchen." The ranger continued: "Usually we like to group things together. Do we put animals in groups?" to which the children responded that they do. The ranger added: "Sometimes we put animals into groups according to what they look like." The then compared grouping animals to grouping the students: "We grouped you all together because you are all about the same age, all first-graders." The ranger noted how humans can also group together animals, "according to what they look like" and gave the example of a stuffed-owl prop that the ranger brought to the lesson. As this example and the following sub themes show, the categories of ordering dominated the lessons and students' experiences on the sites, where logical organization is assumed, valued, and reinforced.

Scientific

Nature is predominately organized and contained through a natural science lens—not surprising considering forest environmental education (EE) on the sites must use a science-based curriculum, as does EE in general. Even though there are different perspectives between EE approaches—preservationist perspectives offered at parks, conservationist forest standpoints, or environmental advocacy stances—many EE framings such as the one I studied rely on natural science framings and take the approach that science will help humanity understand and address environmental degradation (Bowers, 2001; Haraway, 1989). In my observations, science was presented as an objective and nonbiased way to understand entities and relationships.

Ordering and containing nature within a science framing is evident first in the curriculum and begins before students arrive. When teachers arrange visits to the NCESF sites, they must choose a science-curriculum objective and pre-arranged lesson for the ranger to use. While the ESF sites and rangers do not necessarily require teachers to do this—that is, teachers can bring students to the sites and not engage in science-based classes—teachers typically do it to justify the fieldtrip as educational. Under the structured context of K-12 education in most public and private schools, running around the forest in an unstructured way is perceived as less educational than structured and controlled science and ecology lessons.

Rangers, teachers, and curricula present a scientific perspective predominantly through systems of scientific taxonomies that are central to natural science. In the various talking trails, during the lessons, and throughout the sites, ordering and containment through science is privileged, such as when plant life is presented through its Latin

form.[34] For example, at Jordan Lake ESF's talking-tree trail, one tree recording says, "Hello, I'm southern red oak, or as the tree experts call me, *Quercus falcata*." In the "talking-rock trails," rocks are identified as "metamorphic," "igneous," and "sedimentary," whose histories are framed through a geological origin narrative. In another example, in Clemmons ESF's "forest geology trail" ("the home of the talking rocks"), the limestone recording notes, "I was formed in a warm tropical sea 25 million years ago," while the granite recording continues, "I am a piece of granite, just one part of a large body of rock called a batholith." Nature is additionally presented through post-Darwinian natural science concepts such as adaptation, survival of the fittest, and competition, such as during one lesson I observed where a ranger from the North Carolina Park Service asserts: "Animals are built for one reason—to adapt."[35]

---

[34] The binomial classification system that is central to the scientific ordering of species in animal, mineral, and plant life was developed and promoted by Swiss botanist Carl Linné in the 18th century. The Latin names given to entities in the NCESF sites directly stem from Linné's system of classifying life. The Linnaean system gave every species of mineral, animal, and plant life a two-part Latin, or "modern scientific" name. Linné categorized a plant through its reproductive parts, a system that had an extraordinary impact on how Europeans ordered and saw the world (Pratt, 1992). Linné's system continues today as *the* major way to scientifically order animals and plants. How order is maintained today in places like the NCESF sites has its history in this naming system and also in early European travel writing that began through natural science. After explorers and colonizers moved from maritime and costal exploration to interior exploration, they did so through the descriptive tools of natural history (Pratt, 1992). Whereas navigational exploration set out to chart and map, Linné and his students traveled the globe (by hitching rides with colonizers and explorers) to document plant and animal life and bring back specimens to Europe for study and classification. In this way, scientists used natural history to order a world that was conceived mostly through chaos (Pratt, 1992). The chaos of nature was made orderly through books, collections, and classifications. Yet, what began as Linnaean ordering (through the language of science) molded into a descriptive and poetic explanation (working from social and cultural assumptions). Themes of reciprocity, sentimentality, sex, slavery, and survival are frequently found in scientists' early travel writings.

[35] Interestingly, I also observed that scientific names frequently are followed by a downplaying of science, likely because the messages are designed mostly for youth. For example, in Holmes ESF's talking-tree trail, the birch tree recording says, "Hello, I'm *Betula lenta*. Boy that sure sounds funny doesn't it? That's the way scientists can tell me from other trees." At the same site, white oak, notes, "Hello there, I'm white oak. I've got a funny sounding scientific name, *Quercus alba*, but I would much rather be called white oak or stave oak."

In sum, one of the most predominant ways in which nature and human-nature relationships are organized and contained on the sites is through a natural-science framing. Scientific framings begin with national and state curricula that link nature to scientific systems, and the NCESF sites continue this framing in individual lessons. Systems of scientific taxonomies are the primary "nonbiased" way to know the sites. In this way, science is a frame that organizes and contains trees, forests, and how humans relate to them.

Named and Identified

In addition to—and in some cases directly related to—a scientific perspective is the use of naming to frame and contain nature. I did not conflate the sub themes of *science* and *naming* because, while science is made up of named entities, nature also is ordered and contained through nonscientific names.[36] The terms that the rangers and the sites use are central themes that become, at times, the primary way of learning about and relating to nature.

Forestry, rangers, and teachers frame trees in multiple ways, including through common names, local and regional colloquial terms, and nicknames. For example, at Jordan Lake ESF's talking-tree trail, the American beech recording notes, "Hello, I'm American beech—some people call me just plain beech, Carolina beech, gray beech, red beech, ridge beech, or white beech." In various talking recordings, naming is also related to human-naming systems, such as the oak-tree recording at Holmes ESF,

> Have you ever wondered why they don't just call me and other members of my family "oak" instead of names like white oak, red oak, and turkey oak? Well, like

[36] Important to note, however, is that while there are multiple colloquial names, there is only *one* scientific name. In this way, scientific names become a kind of ultimate regulator of names.

> you and your family, we trees have first and last names. For example, my last name is oak, which places me in a specific family, called a genus. My first name makes me different from other members of my family.

Another recording at Rendezvous Mountain ESF similarly notes, "Trees, like people, have a last name that identifies us with our family, but it's our first name that makes us unique."

I frequently observed the overwhelming need to *want* to know what something is named. When students encountered an unfamiliar entity in class or on the sites, "What is that called?" was often the first question they asked. In one interview, a ranger told me that students sometimes ask, "what do you name the animals here?" Adults—educators and visitors alike—similarly focused on wanting to know something's name. One interaction I observed illustrates this point. I attended a workshop through the North Carolina EE certification program that introduced participants to EE curriculum, in this case, a class called "Aquatic WILD" which focuses on aquatic life and ecosystems.[37] The class is open to educators such as classroom teachers and fellows, environmental educators, administrators and officials, and youth leaders.

The lesson I attended began with an introductory activity in which all participants stood in a circle. A plastic blown-up ball-sized globe was thrown from person to person, where we introduced ourselves and then named a body of water.[38] At the end of the activity, the instructor stressed how many bodies of water we named and that many

---

[37] Project WILD provides supplementary materials to the Project Learning Tree (PLT) curriculum.

[38] To my dismay, I felt entirely foolish when it came to my turn and I blurted out "puddle;" after others had replied with answers such as "ocean" and "lake," puddle was the only water body that came to mind. The group responded with slight laughter and the instructor affirmed, sincerely, that a puddle is a body of water.

people do not know the differences among bodies of water. The instructor stressed that the class was design not only to teach us how to teach students what things are named, but that it is important to *want to know* what entities in nature are named.

Rangers and educators promote naming and wanting to know names as a way of becoming closer to nature, by making the unknown known. In the same educational workshop I discussed above, after a two-hour classroom period where we learned the names of aquatic insects, we went to a nearby human-created pond to observe and catch aquatic life. After several people caught two quarter-sized baby turtles with a net, everyone gathered around and immediately began wondering what kind of turtles they were. The instructor went into the office and returned with a turtle-identification book. I joined the rest of the group in huddling around the book, looking at pictures and descriptions, and hypothesizing what kind of turtles they might be. During this interaction, I observed that determining the name was the primary thing people wanted to know, and this dominated our behavior and conversation.

After learning what kind of turtles they were, the other students returned to the pond to release the turtles and catch more wildlife, creating a cycle throughout the rest of the lesson of catch-name-release. After identifying the baby turtles, I remained seated with the instructor and asked if students typically want to know the names of things and why. Pondering the question, the instructor affirmed that the name is often the first thing students want to know. The instructor noted that, in general, naming makes it easier to understand things, "or at least feel like we understand things," as the instructor phrased it. The instructor also hypothesized that knowledge through naming perhaps allows people to dominate and control. The instructor ended with a story of hiking with a friend, during

which the instructor became caught up in trying to name something. After a while, the instructor's friend finally turned and told her to forget about the name, and said, "After all, the names don't matter." The examples above illustrate not only ordering and containing nature through naming and the need to name, but also the ways in which naming guides communication and interaction. Additionally, the examples begin to simultaneously illustrate the notion of resistance, such as the instructor's reflections and articulations of past communication.[39]

Rangers and the talking trails also engaged in meta-communication about naming, who can name, and why. During a workshop, one forest ranger said, "We [the forest service] like to name fires. They name them some pretty strange names, such as the 'bullfrog fires' where there was a bullfrog in the middle of the road when firefighters arrived." In lessons about forest-management techniques, one ranger said, "The Forest Service likes to label everything." In another lesson, a ranger said, "One neat thing about forestry—we make names for things," and then joked, "Maybe its job security—if we don't do it someone else will."

Here, naming is not just something that is; naming is something people actively *do*. The quotations above point to the forest service and other parties as having the ability to name and the tendency for those names to be privileged over other names. For example, the locust-tree recording at Rendezvous Mountain ESF states, "Many of my interesting characteristics set me apart from other trees. Indians used my strong hardwood to make their bows. The English *colonists first named me* locust in 1607 because of my resemblance to the carob tree" (emphasis added). In this passage, note that English colonists "first" named the tree. Even though "Indians" (an ambiguous and homogenous

[39] I more thoroughly expand on the notion of resistance in chapter six.

group) are said to have used locust trees to make bows (and likely had their own names for the tree), the tree's "original name" is attributed to English colonists.

With naming, an essential way to order and contain nature is through the process of identification and detailed description, where learners are taught "how to identify."[40] As one nature instructor said during an all-day nature camp held at one ESF site, "Today we are going to learn how to ID a tree. When you are walking around the forest, don't you want to know what kind of tree you are looking at?" During this lesson, children then were given a "My Leaf Collection" notebook in which they taped leaf samples collected during the lesson and wrote the names next to the samples. In general, instructors and rangers present identification and description as a primary source of knowledge that is important in understanding nature.

Identifying and describing come primarily through presenting technical specifications of entities in nature. In addition to specific names, a number of measurements and dimensions are used to identify an entity's name; these typically occur all in a row, one after the other. Tree specifications include growth rates and patterns, parts, sizes, dimensions, height, girth, age, and stages of life. The southern red oak recording at Jordan Lake ESF provides an example:

> I am a young tree now, but in time, I'll become 70 feet to 80 feet tall. My trunk will be 2 to 3 feet in diameter with spreading branches that will form a broad, open, round-topped head. My fruit is an acorn that is almost round and about 1/2 inch long. My dark brown or black bark is rough and scaly.

[40] The phrase "How to Identify" comes from a booklet on tree identification published by the North Carolina Forest Service.

Essentially, identifying and describing go beyond simply naming to also frame *how* the viewer should order the tree. As the above example shows, trees commonly are presented first through their name (in this case, both colloquial and scientific) and then through specific physical attributes and measurements. Other characteristics are offered, such as parts (e.g., a tree's trunk, crown, branches, twigs, leaves, needles, buds, flowers, blossoms, bark, and seeds), age, color, smell, texture, appearance, size, diameter, growth rate, shape, height, girth, taste, straightness or curvature, growing location, types of soil grown in, the amount of sunlight needed, which wildlife they attract, and even attributes of wood (weight, strength, hardness, thickness, straightness, and bend). In the "forest geology trail" at Clemmons ESF, the talking rocks are described by attributes such as the color, shape, size, hardness, luster, transparency, and the kinds of minerals it contains. Important to note is that this detailed description is done almost solely through physical parts and to accompany naming.

In addition to the talking trails, the lessons I observed similarly focused on the importance of naming, describing, ordering, and containing nature through specifications. In one lesson called "Tree Rings," students are taught to determine a tree's age by using an increment borer to drill into a tree, remove a live "core sample," and then count the rings in the sample. The core sample provides a specimen that then is measured through specifications. In another lesson called "Predator and Prey," rangers similarly teach children to order animals by their names and physical characteristics, including knowing an owl by its talons (claws), beak, eyes, feathers, head, and neck. These specifications are also described in ways that relate to humans. In one "Predator and Prey" lesson I observed, a ranger notes that the owl's down-like feathers "act like a muffler" and "a

silencer and make him real quiet."[41] Here, interesting to consider is how the rangers' and children's explanations are mechanical and technological and point to how humans control and create.

In sum, naming becomes a primary way to order, contain, and know nature on the sites. In addition to scientific names, rangers, forestry, and curricula use common names, nicknames, and regional terms. Comparisons are made between naming trees and naming people, and meta-communication about naming practices positions naming as an important act. Not only was there a need to want to know names, but this tendency guided communicative expressions of how people wanted to make the unknown known. Learning "how to identify" an entity's name through a long list of physical characteristics and detailed description was a predominant method of ordering and containing.

Managed

Nature is arranged and contained through management, where human forest management techniques are advocated as ideal; management and stewardship are central tenets of state and federal forestry in the United States. The primary task for rangers, the North Carolina Division of Forest Resources, foresters, and land owners is *to do things to and with* trees, while also teaching people the importance of management. Humans are framed as the deciders of how best to deal with trees and forests, where ownership is advocated as the most ideal way to contain and manage. Also evident in management framings is the notion that nature is unnatural, or, non-human management is deemed imperfect when compared with human management. Ultimately, nature is perceived as needing human management because without it, it is unruly, unnatural, and inefficient.

[41] In one lesson, after the ranger said this, a child immediately responded with another way to relate by saying, "Down feathers are like a mute button on a TV."

The rangers and the organizations that govern them assume specific roles to manage the forest. Tasks include looking after trees, regulating tree growth rates by managing fires through prescribed burning and fire-prevention education, educating the public on the value of forests, providing private land owners with tools and information, and promoting and using techniques such as thinning, clear cutting, the seed method, and tree planting. A forest ranger's goal is to advocate stewardship and to promote the primary belief that trees and forests are renewable resources. Rangers maintain "forest demonstration trails" on the sites that show visitors what various management techniques look like (See Figure 5, forest demonstration trail.).

As rangers and forestry personnel told me throughout the study, conservation (versus preservation) is heavily advocated as the ideal management strategy, such as when one ranger told me, "We are conservationists, not preservationists. Most people don't know the difference."[42] To differentiate from park preservationist practices—and as previously illustrated by Oravec's (1984) articulation of preservationism and conservationism—another ranger stated (in a kind, non-condescending tone), "We're not sitting around singing Kumbaya."

[42] From my observations, the fact that people do not know the difference between conservation and preservation and between park and forest appeared to be accurate. Visitors, teachers, parents, chaperones, and children often confused the forest rangers as park rangers and the forest site for a park site. Additionally, in many conversations I have had with people about my project, people switch back and forth between parks and forests, even after I clarified I was working in a forest. Additionally, one could further confuse conservation with preservation and park with forest, but not necessarily equate park with preservation and forest with conservation.

Figure 5. Forest Demonstration Trail. On all six NCESF sites, these trails provide visitors with examples of management techniques. In this picture, an example of prescribed burning is on the left and thinning is on the right.

A primary forest management task that rangers feel is important is making people aware of where the products they use come from. Forest officials on these sites advocate management techniques as the best way to provide people with those products. In an interview, one ranger discussed how sometimes people "freak out when they hear about clear cutting." The ranger noted, however, that people do not realize where their wood-based goods come from. Another ranger then told me a story of one parent who said they did not like, nor advocate clear cutting. Wanting to show the parent how they use trees, the ranger told me, "I asked her where she lived, and she said, 'in a wood cabin.'"

Managing the forests was a primary theme in the lessons, in both the formal curricula and in the questions parents and students asked. In one lesson, after the ranger

mentioned clear cutting, one parent told the children that clear cutting was done near her family's home, behind a creek. The ranger replied, "Now what if I told you the best one [forest management technique] to do was a clear cut?" The parent answered, "Then I don't know much about forestry," to which the rangers and parents chuckled. In another lesson, a ranger promoted clear cutting as a way to reap the most from a forest. The ranger said, "Clear cut . . . it's a real good method, believe it or not. If you go through and cut all the trees down, one, the landowner gets a lot of money for it." The ranger continued, "There are a lot of advantages besides making money," including that wildlife love clear cutting for the food it provides. The ranger said, "If you have 20 acres and 300 trees per acre, if you clear cut, within months you'll have thousands and thousands of stems per acre … Those trees can't go until the big ones are gone." The ranger explained how clear cutting allows sunlight to hit the forest floor, where "the seeds take advantage of it and grow" and it becomes dense and "gnarly." The ranger concluded, "That's how nature works."

Nature is ordered and contained through management when rangers see forestry practices as a way to maintain trees as a renewable resource. One ranger noted how trees always can be replanted, but "once you use a tank of oil, it's gone." In one lesson, a ranger discussed trees as a renewable resource, best if managed by humans. If humans cut down trees, they can plant more in their place, but it takes a long time. The ranger continued, "We can't go out and cut them without having a plan," and the ranger ended the lesson with, "We want nature to do it for us … we want a new forest." The rangers also frequently pointed out that the educational state forests are not just educational

places, but "working forests." While the state finances the sites, funding is supplemented through timber sales from the sites and goes directly into the working budget.

Within management framings, nature and humans are perceived as different kinds of managers; nature is framed as a flawed overseer of trees and humans are constructed as ideal managers. First, nature is perceived as imperfect and problematic. When non-human entities do things to trees, they often are depicted as unnatural acts. In particular, insects, beetles, fungi, ice, lightening, and fire—and the things they do to trees—are framed as flawed. The shagbark hickory recording at Jordan Lake ESF warns of its "enemies," including, "ice which can break my limbs; and insects, which eat my leaves and bark." Other "harmful" enemies of trees include beetles and fungi, as the loblolly pine recording at Jordan Lake ESF illustrates:

> I may look big and strong, but I can be killed by a tiny insect no larger than a grain of rice. That insect is the southern pine beetle. This small, black insect usually attacks weak pine trees first. They'll bore into the tree's bark and lay their eggs. When those eggs hatch, the new beetles, or larvae, kill the tree by eating its tender wood. When they've had their fill and done their damage, the beetles bore back out looking for a new victim!

Fire, in its "natural" form (such as caused by lightening) is framed as dangerous. The shagbark hickory recording at Jordan Lake ESF states this point: "I am easily damaged by fire. My small seedlings are killed even by the smallest fire. Larger fires burn my bark—making large wounds that allow my wood to rot."

In addition to insects and fire, some tree-growth patterns are depicted as unruly and stubborn and impede a tree's ideal development. The sourwood-tree recording at Jordan Lake ESF illustrates this point when it depicts "under story trees:"

> We're called under story trees, because we grow underneath the towering pines and poplars. If you look around, you might see some trees that don't grow well in the shade—like the cedar. When it gets trapped underneath the taller trees, the cedar may die, because it can't get enough sun. It will become weak and diseased. The cedars lying on the ground on your way here died, in part, because the pines crowded out their sunlight.

Nature is even depicted as interfering with a seed's development, as one tree recording at Rendezvous Mountain ESF shows: "While nature provides everything a seed needs to survive. It also provides many obstacles to the seed's survival. From the beginning, each seed must compete with its neighbor for water, food, sunlight, and space in which to grow."

After nature is portrayed as flawed, humans are depicted as ideal overseers who can correct and prevent nature from damaging forests. The shagbark hickory recording at Jordan Lake ESF shows the logic that humans are necessary to order an uncontrollable nature:

> The beetle can be controlled, though. The best way is to remove sick or dying pine trees from the stand. Sometimes insecticides work, but not always, plus insecticides can be expensive. But, the very best way to keep me safe from the beetle is to keep me healthy. That way, the beetle will have a hard time getting into my bark in the first place. Just give me plenty of room to grow and make sure

> I don't get sick and weak. A forester looks after me now—I know I can count on her to make the best decision for my future.

In a lesson, I observed a ranger talking about how, when a tree gets too old and stops growing, a storm might come through and blow it over and "we have to do something about it." In another lesson, a child was asked to act like a tree; after growing to be 100 years old, the ranger indicated the tree would die. The child replied, "So after 100 years I just die?" to which other people in the room chuckled. The ranger replied, "You're going to get so big you'll start to get weighed down." The ranger explained that an ice storm will come and weigh you down, and "we can get to you before that 'cuz we can use the lumber." In one lesson called "animals," taught by a park ranger off site, the park ranger sought to teach students about the animals found in the area. The park ranger depicted the bald eagle as a "deceitful" and "dirty" animal who steals food from other osprey and fish. In another lesson—a water wildlife lesson—the ranger framed bugs as "good bugs" and "bad bugs." After several children asked the ranger how bugs can be bad or good, the ranger clarified, "Well, all bugs are not bad bugs, they just kind of have a reputation. Like a mosquito. Nobody likes mosquitoes, right? So they are more of a nuisance than a bad bug."

In sharp contrast to a flawed nature, humans provide the best way to manage nature, something that nature itself does not do well, as a recording at Turnbull Creek ESF notes:

> While you are looking at this new forest, think about the word—*clear cut*. When you hear this word on television, a negative image comes to mind. Many times the word *clear cut* is associated with stripping the land of trees and leaving it.

> However, that is not how a properly prescribed clear cut is done. Trees are like other living things; they grow, reach maturity, and eventually die. *Instead of allowing these trees to die and rot, it is better management to cut these trees and use them* to make products [emphasis added].

Here, trees need managing because they get old and die. Humans are framed as idyllic managers, and trees are less-than-ideal forest regulators.

As the above examples show, humans manage nature in organized and contained ways. Humans, specifically rangers and land owners, are necessary regulators who can do a better, more efficient job than nature at managing forests. Rangers do what nature normally does, just faster and better. Rangers then educate students on how humans can best manage nature, where human management becomes a specific way of ordering forests. In contrast to inappropriate natural fires, when started by humans under proper and prescribed burning techniques, fire is beneficial. The notion of fire as unnatural is interesting because it would seem that in its natural form, fire is indeed "natural." As ideal managers, humans frame themselves as supervisors and controllers of nature who know and can do what is best for forests. As one talking-tree recording at Holmes ESF asserted, "We're pretty proud of our home here because our forest and all its components—soil, water, and wildlife—are kept healthy through the Forest Service's active involvement."

A sign on one site, titled "An Evolving Forest," displays why management is needed and how modern rangers have stepped in to properly manage forests. The sign has three sketched pictures and captions. The first shows a barren field, with a few trees, a dirt and barren forest floor, and with a caption that reads "1937 eroded farmland, Wasted, Unproductive." The second picture shows young plants and trees planted in a row next to

a greenhouse, with the title, “New forest planted; nursery built, seedlings developed, experiments begun.” The last picture (approximately twice the size of the previous two) shows an aesthetically beautiful forest in splendid autumn colors, with the caption, “Today . . . productive forest. Timber production, wildlife protection, watershed improvement.”

As this sign illustrates, humans are ideal managers of nature, ordering and containing it into tidy and productive sites through forest-management practices. Separating and then framing humans and nature in this way points to a “human good, nature bad” construction, where nature outside of the human is harmful, unpredictable, and dangerous. Managing in this “better” way becomes another method to order and contain “wild” and “gnarly” nature.

Gendered

Next, nature is ordered and contained through ascribed gender traits and roles and through androcentric practices. Gendering takes the form of a predominant use of male-gender pronouns and relationships to refer to trees, nature, and animals. I observed humans ascribe gender characteristics, norms, and roles to nature. The role of gender in forestry was an additional theme that I interpreted from the data, where gender also orders and contains human relationships.

First, rangers, teachers, parents, and students used gender pronouns throughout the sites to refer to trees, nature, and animals disproportionately as *he*, *him*, and *his*. One example is seen in the American beech recording at Jordan Lake ESF:

> Still others [trees] have been removed to provide man with foods, fibers and medications. Above all they have provided him with wood. Prehistoric man used

> woods to make his first spear, his first boat, and his first wheel. Throughout history, man used wood to make tools, construct buildings, and create works of art. He has also used it for fuel. Living trees are as valuable to man as are tree products because they help conserve natural resources.

In another example, in a "Predator and Prey" lesson I observed, after continually referring to owls and mice as "he," the ranger picked a student's mother to play the part of an owl. I noticed that the ranger continued to call the owl "he" even though a female human was playing the part. In another activity, during an EE training class called "Identify the Adult and Baby," the teacher constantly used "he" to describe the adult, even when the adult was talked about as being the insect that gave birth to the baby.

Continuing with my observations of rangers and adults using gender pronouns, in one lesson, I documented a child who referred to an owl several times as "it" but then switched to "he" after the ranger and parent used "he." In this interaction, the ranger asked the students to define "prey." One girl answered, "The one that's going to get eaten," and a second girl added, "It's the one that's gonna' get eaten." The ranger then said, "He's the one that's gonna' get eaten," and a father chaperone added, "He's dinner." The ranger then asked the students to define "predator" and the first girl answered, "It hunts it." The ranger confirmed, "He hunts him." I noticed after that interaction that both girls used "he" several times, instead of "it," to refer to animals.

Next, I observed that human gender characteristics often were written onto nature. Interesting to note are the male and female voices used in the talking recordings. Of the

61 talking stations I analyzed, 36 used male voices, while 16 were female.[43] Additionally, while visiting a site, a ranger gave me a "cover information sheet" that detailed information about how voices for the talking-tree trail were chosen. The cover information sheet reads as follows:

> Talking Trees Cover Information. Trees will be assigned male/female voices as follows: 1. White oak: male, older if possible, since this is the oldest tree on our trail. 2. Sweetgum: female, age should be considered middle-aged, but not gruff. 3. Flowering dogwood: female, age should be young, mid-twenties. 4. Loblolly pine: male, age should be in mid-thirties. 5. Yellow poplar: male. 6. Eastern red cedar: male. 7. Atlantic white cedar: male. After tree has given its message, all voices used should say things like, 'good-bye, see ya' later.' This will re-connect all trees in saying farewell to the visitors and their messages. Works real well with the children.

In the above example, age is similarly evoked, where a young female's voice is chosen for the flowering dogwood. Human gender characteristics also surfaced in the content of the talking-tree recordings, such as one sweetgum recording: "These big ole trees around me just won't let a little gal like me get much sun in the forest. But I do like the shade and I'm patient, so I can wait." At the Rendezvous Mountain ESF, gendering takes the form of carved faces that are used to represent the trees (See Figure 6). For example, as the picture below shows, the "scarlet" tree is not only designated as a female, but it has a female voice and face associated with it.

[43] Nine stations were not working due to lightening strikes, flooding, and technical difficulties. Although rangers gave me the typed transcripts, because I did not hear the recordings, I could not determine the gender.

Figure 6. Nature as Gendered. Anthropomorphic and androcentric face carvings used to identify trees on one site's talking-tree trail.

Next, traditional gender roles and norms are reiterated throughout the lessons. In one lesson, a ranger asked the students, "Does your dad ever split wood, and he hits a piece of wood and he can't bust it? And he hits it 20 times and still can't bust it?" In another lesson, a ranger asserted, "People, we don't like mice in our house. Moms especially don't like mice; they get on the chair and scream." In another lesson, when a ranger described a family, the ranger positioned the "mom" in the house—in the kitchen, specifically—and the "dad" outside, mowing the lawn, cutting trees, hunting, and playing sports. Throughout the lessons, females are used in many cooking examples, such as in a

lesson where a ranger asked the children if everyone's mother makes them macaroni and cheese.

In the "forest logging history trail" at Rendezvous Mountain ESF, when talking about the role of women in forest logging camps, one talking post says: "There was no room in early camps for wives and children. The wives and children had the most important jobs at home. They had to make sure the pigs, cows, sheep and chickens survived the cold winter." While this message appears complimentary of women and children, who are credited for doing "the most important job," the trail is devoted to the work of male forest loggers, with its male logging camp exhibit, working sawmill, and a display honoring mules (who speak in male voices). There is not a display honoring the "most important" women and children.

Androcentric organizing and containing practices are also evident in children's reactions to the rangers and the sites. Several female rangers told me how it is common for children to ask them if they are male or female, and children often mistake them for males.[44] One female ranger told me a story of when she was in a bathroom and a child came in, stopped and looked at her, and then ran out, yelling, "There is a girl ranger . . . and she has a gun!" (The forest rangers do not carry guns.) Additionally, several rangers told me that students often ask questions about gender in the lessons, such as how to tell the difference between a boy fox and a girl fox. One ranger told of how she typically

[44] Park and forest rangers were originally all males for a specific reason. Due to the absence of congressional funding to protect and maintain early parks and forests, army soldiers took on the role of protecting and managing them. Early park rangers included the famed "Buffalo Soldiers—groups of African American cavalry members who were some of the first national park rangers in California. Before the occupation of "ranger" was ever created, soldiers served this role. While forest rangers are not trained police or armed with guns, park rangers are.

answers that question with, “That is something you need to go home and ask your parents.”

Last, I interpreted that the role of gender in rangers’ professional experiences was evident. Gender seemed to be a common topic among the rangers with whom I spent the most time. One male ranger, when talking about how he works with women said, “I have one at home and come to another at work.” When I came onto my primary site to begin the project, one female ranger told me how she was happy I was here because my presence made the women outnumber the men. At one site, there was a story told several times of a young male ranger who had never ever heard the term *women’s lib* and was teased by the other rangers. When telling this story himself, he explained that he did not know what women’s liberation was because, “I was born when everyone was equal.”

In another example, I observed female rangers perform traditional gender roles. On one site, a number of outside forest rangers (all males) traveled to the site for several days to help the on-site rangers with maintenance projects. A female ranger cooked a large pot of chicken and rice, brownies, and cookies for everyone. At lunch time, the males sat in the office until she called everyone into the lunchroom for lunch. In interviews, I asked female rangers about their experiences being a female in a male-dominated industry. Several female rangers told of how they are aware of their gender, especially during meetings when they are the only woman in the room. In this way, a focus on gender within forestry illustrates how gender is carried into the rangers’ professional realm in addition to the sites, contributing not only to an ordering of the sites but also of relationships among people who work the sites.

As previously mentioned, human constructions and notions of class, race, and gender are at stake in contemporary forest EE lessons which have implications in debates about humans. For example, Terry's (2000) assertion that scientists conflate sex, gender, and sexuality in their research that labels fruit fly behavior as "gay," female primates as "lesbian," and rams as possibly "queer" is relevant here. The kinds of gender labeling and ascription—and, further, the relationship between male and female—begin to surface in the sites.

The heteropatriarchal familial assumption about naming that lies at the heart of the above gender examples is quite stark. A significant body of literature points to nature as gendered female and to the intersection between nature and gender (Bullis, 1996; Plumwood, 1997; Rogers, 2008). In the examples I offered above, gender is not simply evoking the notion of male and female (that there are male and female birds, for example), but it is also about a particular kind of male and female who are in relation to each other, implying heteronormative gender (Butler, 1993).[45]

As the examples above illustrate, in the context of my observations, people and parties conceptualize nature through an ordered lens, where gender is perceived through "logics" of natural science, naming, management, difference, and professional gender roles. These frames of order allow humans to make sense of the sites in gendered ways, where nature is understood, ordered, and contained within cultural gender systems.

A Physical Place

Nature and the forest sites predominantly are framed as bordered and contained physical or geographic places, notably places for humans to go to and through. First,

[45] There also appears to be a particular race and class to the gender that goes unnoted, such as the talking-tree face carvings that illustrate how they are not just gendered, but decidedly white.

place was depicted through bordered and contained physical and geographic forms—neighborhoods, hometowns, continents (North America, the North American Continent, Europe, Asia), regions (the south, out west, the tropical rainforest, the coastal plains, the piedmont), countries (the United States, Canada, Ireland, China), specific areas (the New World, the Orient), and states, territories, and counties (North Carolina, Florida, Nova Scotia, Kentucky, Johnston and Wake counties, the Tar Heel State, the Old North State). The sites depict mostly contained geographic places where specific types of trees can be found, such as Pennsylvania and the Gulf of Mexico.

The forest is talked about as a "home," a "hometown," and a "neighborhood" for humans and wildlife alike and is compared with non-home places (e.g., The North Carolinian piedmont is compared with tropical rain forests; the United States is compared with England, Europe, and Asia). In talking recordings, the primary use of blue grass or regional music in the background establishes the sites and forests in a contained North Carolinian regional space. Forests then exist within larger contained and ecologically ordered places, such as watersheds, swamps, mountains, lowlands, hills, and coastal plains. The process of "placing" becomes another way to organize the forests.

First, locating where one is geographically and physically in a place appeared to be a goal among the educators I observed. In one observation, in a class to educate environmental educators through the North Carolina EE certificate program, the instructor stated that one goal of place-based education is to identify *where one is* and to know the pressing issues of their physical area. The instructor asked, "Where am I in my river basin? Do I care what's going on in my river basin?" The instructor asked us to identify which river basin we were in, something I did not know.

Next, the forest and nature are predominantly framed as places to go to and places of one's own, as one science teacher said to students upon exiting the bus for a visit: "This place is ours for the day." In the spatial features and the layout of one site, I noted that a bathroom complex, a landing pad with a retired fire-fighting heavy machinery, trailheads, and dirt and paved parking lots, all frame the forest site first as a place that one goes to and arrives at. In one example, when students were guided by rangers down a trail to outdoor amphitheaters for lessons, I observed students say things like, "Where the heck are we going?" and "We're going to the forest."

Designated areas within the sites, such as trails, outdoor classrooms in clearings in the forest, and the increasing trend of indoor classroom structures are positioned as physical places to go to (See Figure 7). The visitor constantly is welcomed *to* the site and, by way of instruction, sign postings, and maps, tell where s/he is *in* that site, such as a talking-tree recording at one forest:

> Welcome to Holmes Educational State Forest, a unique outdoor experience, located in the Blue Ridge Mountains, with its rugged terrain, numerous rock outcroppings, and scenic vistas … These features are made accessible by a series of well-marked trails, accented by exhibits and interpretive signs explaining the ecology of the managed forest.

Figure 7. Nature as a Physical Place to Go To. Top and middle: Amphitheatres and outdoor classrooms where students are taken for lessons. Bottom left, an outlook area on a trail. Bottom right, a standing area on one trail; standing on this podium and looking out gives visitors the ability of how to conceptualize an acre of land.

Trees consistently are framed as growing *in* a specific place; trees are of, in, and connected to a physical site, such as a sign on a loblolly talking post at Jordan Lake ESF, that reads: “One of the meanings of ‘loblolly’ is mud puddle, where these pines often

grow." The shortleaf talking-tree recording at the same site asserts that it is "one of the four important pines of the South. I grow in 24 states—from New York to Florida and westward to Texas and Oklahoma."

Trees further are framed as having associations with other trees in other contained physical places, such as the loblolly recording at Jordan Lake ESF that talks about its "fellow trees all over the South." The shagbark hickory recording on the same trail notes that it is,

> Part of the hickory family, a very large group of trees. With the exception of only one, all hickories are found only in North America. In Europe I am known only from fossil records. I am one of the most common hickories throughout the eastern United States.

The recording continues: "I, along with the other kinds of hickories, am truly an American tree," with "20 cousins that live in the United States. One of my cousins lives in Mexico and the other likes to live in the Orient." Another passage from the American beech recording at Jordan Lake ESF illustrates how trees are tied to continents, nations, and states:

> My name is usually shortened to simply *beech* since, with the exception of a relative of mine in Mexico, I am the only species growing in the New World. I have a purple-leaved relative from Europe that people like to grow in their yards. I can be found in the eastern part of the North American continent from Nova Scotia to Florida. I am in greater abundance on the northern part of my range. I am ranked 7th in the production of hardwood lumber. Kentucky produces the most of my lumber.

Another tree recording at Tuttle ESF is even talked about for how its correct place has finally been determined, after years of being misplaced: “For years I was confused with my cousin the <inaudible> hemlock. But now I have my own name and place here in North Carolina.”

In addition to places to go *to* (e.g., the forest sites, outdoor classrooms, and lookouts and standing places), the sites are framed as places to go *through*, and to do so in specific ways. The forest entrances and exits, clearly marked trails (some with “do not enter” signs at the exit), container walls and boardwalks on some trails, and small directional placards throughout the sites direct visitors how to enter, exit, and move through the sites in proper ways. These markers establish contained spaces of flow to travel through the sites (See Figure 8).

The talking trails in particular are set up to enable the experience of traveling through space. The trails’ spatial design contributes to the tendency for visitors to start at the beginning and go to the end, versus be in or of them. I observed one ranger leading a class on a tour through a talking-tree trail. Before the tour began, the ranger asked the teacher “How do you want to do this?” The teacher replied, “Just let them do it at their own pace.” The students entered the trail and traveled quickly to the first talking-tree post, huddled around it, and pressed the button. Several students stayed to listen to the recording, but while the first recording was still playing, most students left and walked quickly (and appeared to be racing) through the trail to the second talking post. One child said, “Yeah, we learned,” before walking quickly to the next post. In other similar observations, while most students walked at a fast pace, moving quickly through the trail to get to the next talking post, several students started running, to which teachers and

chaperones typically instructed, “Don’t run.” Due to the design of the talking trails, even when students were allowed to do it at their own pace, they tended to move quickly.

Figure 8. Nature as a Physical Place to Go Through. These pictures illustrate physical markers that guide people through the site while containing them within spaces and trails. Top left, a trail sign posting. Top right, a trail with container walls. Middle left and right, directional placards.

The tendency to move quickly through the forest to get to an outdoor classroom made it less possible for students to stop and notice what was around them. I frequently observed rangers and teachers guide students at a quick pace through the forest to get to a teaching site. In one observation, three first-graders were walking single file at a fast pace from the bus to an amphitheatre. One child stopped, pointed to a tree, and said, “Look, look, look!” The other two children keep walking, and the first child ran ahead to them.

The trails became places people move through to arrive at a contained place. The trails also are depicted as something people should stay on when they are traveling through the sites. I observed a group of children go off the trail and walk through a small section of forest. At that point, I heard the ranger tell the children, “Go around! Go around the trees, not through them! Sheesh.”

I also observed people walking the trails unguided, and I noted a similar *going through* tendency. On one talking trail, I observed visitors walk the trail self paced. At one point, I saw one adult go ahead of her small group of four to the next talking post. After she returned to the group, I overheard her say, “I feel like a kid. I saw another talking rock up there and had to go see what it is.”

I experienced the desire of wanting to travel through at Rendezvous Mountain ESF, where, as the previous pictures in figure six illustrate, caricatured wood face carvings are hung at each post. I found myself wanting to go quickly through the trail so I could see the next face carving. At two sites, the face carvings were missing (a ranger later told me they were taken down to be used in a parade). I wrote the following in my fieldnotes:

> I look for the face, but I don’t see it. I look harder—to the sides and all around the tree. I feel a little disappointed that I can’t see the carving. I begin to wonder if this post wants you to do a special “search for it” game, so I look closely all around but I still don’t see a face. I think immediately of traveling to the next talking tree before realizing I haven’t even pushed the button for this one, nor have I experienced anything near me, except for looking for the face carving.

I also observed traveling to and through particular spaces. On each site, there are less regulated areas of forest and portions of trails, such as the longer forest management trails (especially the later parts) (See Figure 9). Yet, I noticed in most sites that these less structured areas are not widely used and are more remotely located. Each site is hundreds of acres in size; the entire acreage is neither available nor accessible to the visitor, and visitors typically do not just start walking into the forest or in areas without trails. Maps of the sites only depict the areas where visitors are encouraged to visit. Signs saying "Follow this symbol" and "Enter Here" discourage visitors from going into unmarked areas or going off the trail; visitors are told to stay on the trails, follow the trail markers, and to do so in a particular direction. A sign at Rendezvous Mountain ESF's talking-tree trail is typical: "End of Trail Do Not Enter." Additionally, one must first walk *through* constructed and interpreted areas, structures, and set ups to get to more quiet and contemplative places. Walking through constructed places can frame how one experiences the site in later quieter spaces.

Being *confined in a space* is another way that a contained and ordered physical place is molded on the sites on the site. This is illustrated in one type of behavior I observed several times during this study. A concrete parking spot for disabled visitors is located near the parking lot and close to the bathroom. I observed that, even though there was much forested and open space near by, after exiting the bus, children congregated to this parking spot to run and play. Sometimes up to twenty children at a time flocked to the spot, which is an approximately eight feet-by-eight feet concrete slab. I asked a ranger

if this was typical, and the ranger replied, "Yes, I've noticed that before. I think it is a little strange."[46]

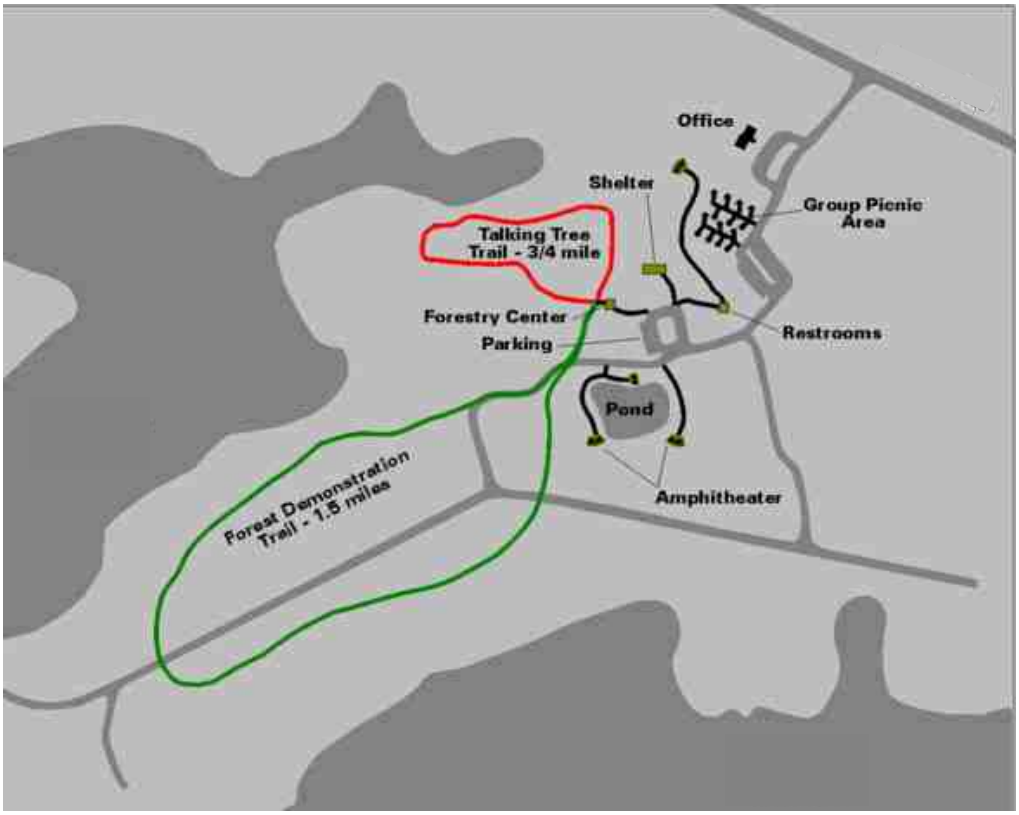

Figure 9. Site Trail Map. Note the longer, less used, and more remote forest demonstration trail as compared to the shorter talking-tree trail, which is more widely used during lessons and is closer to developed areas.

Essentially, space is framed in an organized and contained way that evokes a sense of fixed space where one goes to, through, and is confined in. This notion of confined place differs from a broader, and not necessarily physical, sense of place that one is *with* or *of*. In the talking transcripts and in many forest-literature pamphlets, trees are inscribed with human national and place-based identities. Ascribing confinement in

[46] This occurrence constantly reminded me of a story I heard. While cleaning a fish bowl, someone filled up a bathtub to put the small fish in. The person noticed that, even though the fish had the entire bathtub in which to swim, it only swam within a confined space the approximate size as the fish bowl.

space can evoke a kind of sense of being restricted in place, or being physically in the forest, but not with or of its presence.

Disciplined

In addition to organizing and containing framings of nature as scientific, named, managed, gendered, and a physical place, nature (and human relationships with it) is ordered and contained through disciplining practices. First, the sites and nature are organized in ways such that they are controlled and governed. Second, while on the sites, I observed teachers and rangers maintaining organization by disciplining children. Essentially, teachers and rangers first organize and manage nature and then do the same to the people who come into nature.

Disciplining Nature

First and foremost, the physical sites have been constructed by humans in ways such that nature is regulated and made to look and function in a particular way. Here, I would like to move more from the previous discussion of space as something to go *to* and *through* to the notion that space is actively disciplined and closely controlled. While this was alluded to in the previous section, I interpreted it as a separate point, important enough to stand on its own. The trees, forests, landscape, and entities within them continually are being made, corrected, governed over, ordered, and improved. While they differ in their local histories, the NCESF sites are physical places of a history of human control and regulation, contextualized within human histories and practices that have forever changed the forests.

In a pocket manual offered to visitors and published by the North Carolina Forest Service (2002)—"Common Forest Trees of North Carolina: How to Know Them"—when it comes to North Carolina Forests:

> Much of this land has had the greater part, if not all, of the merchantable timber cut from it at least twice; there is practically no virgin forest remaining; a significant portion of NC's forest land has previously been cleared for agricultural use and later returned to its current forested state. (p. ii)

Referred to in the pamphlet as "third crop" and "third forest," the sites have all the proverbial appearances of forests—lush plant and animal life, brilliant colors, moist air, lower temperatures under the tree canopies, and the ever-present sounds of wildlife—because humans largely have reconstructed them to be so. The dense and ever-changing forests that existed prior to European colonization and U.S. American expansion were subjected to vast deforestation by logging and tapping operations[47] during the 17th and 18th centuries, large-scale logging operations throughout the 19th and 20th centuries, and then by farming practices prior to the mid 1930s. In the 1930s, the National Forest Service created tree nurseries that led to the eventual replanting of forests in the area.[48]

As previously mentioned, the sites are structured in disciplined ways, where they have an order and sequence. Ranger stations are typically located at the entrance, and visitors see them before parking; in five out of the six sites, one must drive past the

---

[47] "Tree tapping" is a technique of getting sap from a tree. The process involves drilling a hollow tube into a tree and letting the sap drip into a container. The sap then is used to make syrup, pitch, and turpentine.

[48] In addition, the very entity of a tree itself increasingly is controlled. Forest-management techniques perceive trees as growing in an ideal way. From the beginning, the genetic and molecular make up of a tree is controlled when humans choose genetically superior and ideal seeds (and seedlings) to be planted and then mange them for optimal growth.

ranger station to get into the forest. A number of shelters, picnic areas, ranger work areas, restrooms, information displays, and trails then guide how visitors should perceive and experience the area.

The physical sites—and how visitors experience them—are disciplined in a number of specific ways. On all sites, there are regulations and rules on signs and postings, with rules on how to walk the trails, adhere to site regulations, and control dog behavior. Most sites also have elaborately constructed indoor "Forestry Centers" with displays showing linear histories, forest-management techniques, physical descriptions of trees, and the products that trees can produce. There is a disciplined order to the placement of trees/rocks and posts on the talking trails, as I was told by one ranger. The spaces between the talking posts, the order of the posts, and what the recordings say have been carefully designed. Visitors are guided to follow the circular, linear flow of the trails in the order they are intended—again, not to go the wrong way but to stay on the trails—forming a disciplined and ordered experience.

I observed on the sites that the entrance and parking lot immediately puts one in touch with the nature centers, structures, and exhibits, one after the other. There is typically something humanly constructed to focus on besides the forest and trees. Rendezvous Mountain ESF's "forest logging history trail" serves as an example of how the trails are disciplined and controlled. The visitor walks first past an entrance sign, and a talking post welcoming the visitor to the trail. A short walk down the path puts the visitor immediately in touch with a life-sized replica of a logger's cabin with its own talking post. Another short walk puts the visitor in touch with a pair of talking mules and then a life-size talking saw mill. After these exhibits, there is a short, unstructured trail

through the forest that ends back at the trail entrance. An excerpt from my fieldnotes shows how I perceived this flow and sequence:

> On this end part of the trail, I notice the quietness in comparison with the talking boxes. There is no longer "anything" to look at, to see, or to hear, and I'm able to focus on what is around me. Yet, I think it is interesting that here, quiet contemplation time comes *after* the talking and constructed site and *after* the space have been framed for the viewer.

This kind of framing is evident in all of the sites, such as in Tuttle ESF which has an old schoolhouse directly near a parking lot, framing the site and linking it with traditional schooling.

Next, there a number of ways that entities in nature are disciplined, where nature has positive or negative characterizes. Language is used to discipline nature into a normal state. A consistent normalizing function designates some trees, forests, and animals as ideal, while others are deviations. Trees are talked about favorably when they are "tall," "young," and "straight" and unfavorably when they are "twisted," "diseased," "small," "gnarly," or with "curvy trunks." "Normal" healthy trees are those that are "great, big, tall trees" and grow abundantly and quickly.

Throughout the talking trails, bigger and straighter trees, and better animals are framed as better. The shortleaf tree at Jordan Lake ESF commands, "Look how tall and straight I am." At the same site, the southern red oak notes, "This is a handsome, long-lived, large shade tree," while another tree at Holmes ESF refers to other trees in the forest as its "tall straight friends." Trees and animals similarly are disciplined through portrayals as heteronormative reproducers. One ranger explains how animals find their

mate: “They don’t have Internet dating, they have scent dating. Hey, I’m looking for a boyfriend or a girlfriend.” Young, straight, reproducing trees are idealized, while old trees are deemed not useful and a hindrance to the younger ones.

Rangers spoke of trees in a favorable “normal” way. I participated with rangers on two occasions when they ran a saw mill as part of their forest management duties, taking felled logs and turning them into lumber. During the saw milling, the rangers commented on the wood as “pretty wood,” “straight wood,” “nice, big logs,” “beautiful wood,” with “straight lines.” In another occasions, a ranger declared in a lesson that “Old trees stop the young trees from growing,” while in another “Aquatic Wildlife” lesson, the ranger established ponds as needing a “normal PH level” to function “normally.”

In another example, in a “Tree Rings” lesson, a ranger asked the students, “What do large tree rings mean?” One student answered: “It’s a good tree.” The ranger agreed and then asked, “What do small tree rings mean?” to which a separate student replied, “It’s a bad tree.” Another student then immediately said to the student, “You’re a tree lover!” After some laughter, the ranger replied, “It’s OK to be a tree lover,” and then immediately asked, “Which would you prefer, a forest full of these [holding up a tree cookie with thin tree rings] or these [a tree cookie with thick tree rings]?” Several children pointed to the thick tree rings. Here, larger tree rings with more space between them denote larger and “better” trees.

In another lesson, a ranger pointed to a tree’s “normal” features and genetic characteristics to show how seedlings from ideal trees are planted to create ideal trees. The ranger stated, “If we have big beautiful trees, real straight, real tall, real beautiful trees,” they need to be preserved. The ranger continued, “The whole idea behind [a

forest-management method] is a kind of genetics. You're picking this tree right here, he's tall and beautiful and straight," with a "big beautiful full crown" and "no disease evident." The ranger explained how "you leave him and cut everything around him." The trees then "Drop their acorns and seed to the ground around them. Hopefully the trees will grow just as tall and straight as him. Hopefully those trees will keep his genetics and be as big and tall."

In another lesson, a ranger explained the same "seed tree method." The ranger said, "You have a big forest, [with] a lot of poplars." The ranger pointed to a few poplars and said they were "real straight, nice trees." The ranger continued that, "If we want to keep that genetics in the forest, leave him and cut trees around him." The trees will drop their acorns and, "hopefully those acorns take, just as straight, just as tall." As these examples show, there are a number of perceived "best ways" for trees and nature to be. There are ideal ways for trees to grow and look and best ways to manage them.

In addition to the site and nature as disciplined, the forest service itself is a disciplining organization. An extensive amount of paperwork, procedures, and structures guide what the rangers and teachers do on a daily basis and greatly influence the material that is taught to children. Budgetary issues are a real and constant source of worry for rangers; one forest supervisor told me in an interview that the educational state forests have received and are operating on, for the third year in a row, about 85% of the budgets they were previously allotted.[49] Budgetary issues were a common source of conversation among rangers, including one ranger who was struggling to be reimbursed for fifty dollars from the forest service for an educational certificate that was mandatory for his

[49] Shrinking public education budgets are also affecting the sites. As previously mentioned, classes and enrollment depend on whether or not schools can pay for transportation to the sites.

work. While a number of rangers and personnel told me in interviews they partly chose this occupation due to its good benefits, they also discussed how those benefits were shrinking and changing, including increased health-care and dental costs, threatened retirement funds, and the constant worry and rumors that someone would be laid off.

Disciplinary issues surrounding curricula also heavily control what rangers can and cannot teach. In one interview, a ranger told me of the procedure for developing a course to be taught, in this case, a class on bugs. The ranger had complete autonomy in designing the class and began researching the things the ranger thought were important for students to learn. Once the class was developed, though, the ranger had to give the curriculum to the supervisor for approval, who then had to seek approval through the district office. The lesson plan had to be passed through curriculum channels to make sure it met North Carolina's K-12 science-curriculum requirements. The revisions then work their way back down through the chain of command to the ranger, who changes the material.[50]

Rangers are busy and have a fair amount of autonomy choosing when to do their duties and chores. Yet, ultimately, while the rangers have some control over what happens on the sites and in the lessons, the district offices—and higher state forest officials and entities—have the ultimate ability to decide, pointing to a larger level of governance and disciplinary control.

[50] In another example, during an interview, a ranger began telling me ghost stories of how the site was haunted. According to the ranger, multiple rangers reported hearing heavy footsteps on the deck leading to the ranger station entrance, even though no one or thing was there. The ranger reported that a water tower light on one trail kept coming on, even though the door was locked from the outside. Curious to see what the ranger would say, I asked if a lesson could be designed to tell these ghost stores. The ranger replied that the district office would never approve that idea.

One example illustrates how rangers ultimately are governed by their superiors and forestry officials. In an interview, one ranger told me of a large "old growth" tree stand located on the site—a stand that had gone untouched for approximately 80 years. The ranger wanted the trees to remain due to the stand's beauty, age, and its potential to be used educationally or recreationally in the future. Yet, district officers—superiors to the ranger's own superiors—wanted to cut down the stand and sell the lumber to make money. When the ranger verbally opposed cutting down the trees to preserve the stand, a district officer nicknamed the ranger a "tree hugger." The ranger was well aware that district officers ultimately could decide, and the ranger expressed frustration at that. Essentially, the rangers themselves are ordered, constrained, and disciplined by the daily rounds of activities and chores, the materials they can teach, and what happens to the forests, even though they are the ones most directly in touch with the sites and thus most knowledgeable about them.

Disciplining Visitors

Like the site and nature, visitors and students are guided and controlled to understand and interact with nature in a particular way—one that I interpreted to take on a disciplinary form. Rangers, teachers, and chaperones perceive ideal ways for students to act during lessons, activities, and on the sites. Teachers and chaperones do most of the disciplining by maintaining traditional indoor classroom management techniques while on the sites, which rangers typically expect and appreciate them to do. Disciplining children takes on specific forms, including commands, questions, acts of guiding, and moments where rangers and teachers take control of students.

On the sites, visitors first are presented with signs, postings, and trailheads that guide what will come and what will—and should—happen, such as a trailhead sign at Holmes ESF:

> The seven trees on this trail marked with the red and green emblem on their trunks are talking trees. We'd like you to know us better by learning a little bit about how we live here in the forest. This trail is 4/10ths of a mile long and should take about 30 minutes to walk. It will lead you back to the Forestry Center.

The visitor comes to expect—and look for—upcoming posts and signs. Talking recordings give a preview of the types and order of trees on the trail that the visitor can expect to meet, creating a disciplined way to experience the trails. The recordings tell the visitor what to expect on the trails and how to conceptualize what is seen, such as the sweetgum recording at the Clemmons ESF:

> When most of you think of trees in the forest, I'm sure you think about using our wood for furniture or lumber. Do you know what other things trees can be used for? I bet you didn't know trees can be used in making plastic, did you?

Establishing and guiding expectations took place during the lessons, in which the discipline starts in the beginning of the visits and continues throughout. When students are bussed in, after they exit the bus, they are typically put in line in the gravel parking lots, often in single- or double-file lines. The rangers and teachers tell students what to expect in a lesson, how long the lesson will take, and how the ranger wants to children to act during the lesson. At the beginning of one lesson I observed, the teacher guiding the students to pay attention to the ranger: "Our park ranger is [name]. We need to listen to her so she can tell us what we need to be looking for and thinking about."

I observed teachers, chaperones, and rangers correct behavior, where children answered a question or attempted to guide the lesson in a particular direction that was different from where rangers and teachers wanted the lesson to go. In one lesson, while holding up a tree cookie, a ranger asked, “What is this black spot?” One student answered, “A birthmark.” The ranger corrected, “No” and said instead it was a fire mark. In another lesson, in a discussion of animal habitats, I observed the following interaction between the ranger, a parent, and students:

Ranger: “What are five key ingredients you have to have in your habitat?”

Students: “Shelter,” “food,” “drink,” “air”

Ranger: “There is one more. This one is hard to get; nobody ever …”

Student: “Maybe protection?”

Ranger: “Protection comes with shelter. Want a hint? Imagine you are animals, which you are. What if you had to stay exactly where you are for 10 hours. You think you could do it without pestering each other? You had to just sit there, no poking. What do you need?”

Student: “Energy.”

Ranger: “No. You’re so close together, what do you want to do?”

Student: “Um, play? Maybe entertainment?”

Parent: “What do you need to play?”

Student: “Play a game?”

Ranger: “Think about it, if you are so tight sitting together for long hours at a time. And you say, ‘I don’t want to be here anymore. I’m gonna’ start poking, I’m going to start fidgeting with him.’ As an animal what do you need?”

Student: “Patience?” [The parents and rangers chuckle.]

Ranger: “Starts with an S. Sp …”

Student: "Space."

Ranger: "Space! There you go. Animals need space."

As this example illustrates, adults discipline children to perceive their surroundings in particular ways.

Visitors to the sites are told to do a number of things through commands. Through the talking posts, visitors are given sensory-related commands; while they are predominately sight-based (as one loblolly pine recording indicates, "Look on the ground around you … can you find any of my old cones?"), some also command to "listen," "hear," "touch," and "smell." The visitor is asked to "imagine," "remember," and "identify," both on and off site, as a tree recording at Clemmons ESF notes, "When you go home, practice identifying the trees in your neighborhood and their uses." The talking posts direct the visitor to "come back soon," "enjoy your walk," and "The next time you eat a hickory-smoked ham, remember what you learned about me in the forest."

Teachers and chaperones frequently give students commands during the lessons, such as "stay on the sidewalk," "don't get your shoes wet" (during the water lessons or when near a puddle), "watch out for the puddles," "don't run," "pick up your feet," "don't drag your feet," "stay on the trail," "sit down," "move," "walk," "follow me," "follow the ranger," "don't panic," "leave the animals alone," "don't pick the flowers/leaves," and "don't pick up rocks." When one ranger guided a group through a talking-tree trail, a teacher physically held a student's shoulders and moved the student so they were facing the talking post, and said, "Stand here and look at the post. Look at the post. Stand in front of the post. Your eyes are on the post." When another student touched the post, the same teacher disciplined, "Don't touch the post" and then physically pulled

the child back. One camp counselor told students during a lesson numerous times to “turn around” and face the ranger; when the children did not, the counselor commanded, “Come here and sit next to me.” In one group’s visit, the first thing I heard a teacher say to students when exiting the bus, in a loud voice, was, “Do not pick up any rocks. Do not pick up any sticks. Do not pick up anything.” I also observed children giving other children commands, such as one child who said in an urgent tone to another child, “Stay with your partner!”

In addition to commands, questions are heavily used on the sites to guide the visitors and students. Talking recordings frequently ask the visitor questions, and rangers regularly ask questions to students. Questions are overwhelmingly framed as “yes/no” and are rarely open ended. For example, common questions that are asked during the talking recordings begin with, “Did you know?” “Can you find?” “Can you see?” “Which of us?” “Can you tell the difference between ?” “How many?” “Maybe you’ve heard of?” “Have you ever heard of?” and “Have you noticed?” For example, the loblolly pine at Jordan Lake ESF asks, “Birds are usually associated with trees and rightly so, but what about deer, raccoons, black bears and squirrels? Do they depend on trees? They sure do.”

In another observation, rangers used questions to guide students to a particular outcome. One ranger asked students why the outer bark on a tree, which is like skin, is important. One student replied, “It keeps it safe.” The ranger said, “That’s right, what do you think it keeps it safe from?” Students answered, “animals,” “fires,” and “us.” The ranger asks, “How about bugs?” to which one child replied, “like termites.” The ranger

asked, “How about a disease? Can trees get diseases?” The children reply, “Yes. Oh, yes.”[51]

During the lessons, adults also correct children’s behavior through commands. On one guided talking-trail tour, as two students bent down to pick flowers, one parent told them, “Don’t pick the flowers. If everyone in the class picked them, there wouldn’t be any for people behind us.”[52] In another guided talking trail tour, two children pressed their ears against a talking post and the teachers pulled them back. In an activity during a lesson, when a child began to run, the ranger commanded, “No running. If you run, you are automatically out. You have to keep walking steady. No running, no jumping, no anything. Just keep walking.” During another lesson, a young boy screamed when a bug landed on him. The ranger told the boy, “You’re fine. Be a role model to everybody else and be brave, buddy.”

Last, students are guided on how to experience the site and where to direct their attention. In one lesson, after the students were seated on benches, the ranger pointed to pieces of thin white material on the ground and asked if anyone knew what they are. A few children answered, “paper?” and “leaves?” The ranger replied that they were turtle egg shells from a turtle that just hatched. The students and counselors alike responded with gleeful curiosity: “What!” “Turtle eggs?!” The children began getting up to look,

---

[51] Students also ask questions to rangers and teachers, such as one excerpt from my fieldnotes shows: “Upon arriving at the site, several students immediately started earnestly asking questions: Do animals live here? Do deer live here? How many deer? Where is their home? Are there wasps and bees? How many animals total live here? How many mammals live here? Are we going to touch any animals today? Do deer and raccoons live here?” I observed that rangers and educators were typically patient with these questions and answered them.

[52] This parent’s comment is a classic example of how people confuse preservationism versus conservationism. The parent’s command not to pick the flower so that others can see it is a preservationist approach practiced heavily in federal and state parks, where children are not allowed to leave the park with anything.

while asking, "What is?" and "Where?" The rangers and counselors both immediately told them to sit back down.

Similar pedagogical disciplinary measures and structures that are found in traditional classrooms similarly are performed in the forest. There is first and foremost an emphasis on schedule and structure and a focus on memory and recall of information (and awards and treats for successfully doing so). In addition, rangers and teachers assume traditional instructor-centered roles. Students are positioned as receivers of information, who teachers and rangers need to change with their information.

First, in my observations, schedule and structure permeated almost every minute of time spent on the sites, with few unstructured activities or free play.[53] A disciplined regimented, logical, and expected flow filled the day, creating a temprocentric approach to the lessons. Students began their visits at approximately eight or nine o'clock in the morning when they arrived to the site by bus or private car. When exiting the busses, they typically did not go beyond the gravel parking lot until they were told to do so.

Typically, students then were split immediately into smaller groups (twenty to thirty per group), lined up in their groups,[54] and then walked through the forest to a designated outdoor classroom clearing that rangers previously set up. On many occasions, the walks through the forest—from the parking lot, to the first class, to the next class, to lunch, and back to the bus—happened at a relatively quick pace. Students

---

[53] On occasion, after the lessons or lunch, there were periods of free time allotted to students that I did not always observe. However, these times still were filled with activities, such as teachers giving students worksheets to fill out.

[54] Putting students in line or in rows was frequent on the site. After exiting the busses and lining up, students typically walked throughout the forest in lines, as they often do in schools. In one ranger-guided walk on the talking-tree trail, upon arriving at the first tree, the teacher said: "Let's make a first row. Make a second row. Make a third row. Eyes on [the ranger] and let's listen."

traveled quickly to the next scheduled lesson in order to get there on time. While teachers and chaperones differed in their specific approaches, they often guided students quickly in order to stay on schedule and get to the next lesson, such as one walk that I observed. On the walk to the lesson, I heard the counselor repeatedly tell the children, "Come on, come, come, come." Several children pointed to a large fire-fighting helicopter that was housed on the site and said, "Helicopter!" and, "It's a bright color." The counselor replied, "Stay together. Walk!" One child said, pointing to the helicopter and bouncing, "Look how big it is!" to which another child said, "Whoa!" The counselor replied, "Move over [several names]. Move over. Pick up your feet. Pick. Up. Your. Feet! Thank you. Pick 'em up!"

Upon arriving at the lesson, teachers and chaperones then seated the students on lined benches. In one lesson, I observed an especially disciplinary teacher guide students how to sit and to do so quickly so the class can begin:

> Walk all the way around. Stay in line, fill up the seats. Stay in line, fill up the seats. We have to sit close together. Sit. You need to go back and get in line with [name of child]. Sit down, fill up the seats. Scoot over.

The teacher then physically moved several children around on the seats, using stern tones and facial expressions. After the students sat, one child turned her back to lean on her neighbor's side and put her feet on the bench. The teacher came over and corrected her, telling her to sit straight with her feet on ground, facing forward. Student then stayed seated throughout the first part of the lesson,[55] participated in an activity that was

[55] Students appeared to handle sitting for long periods of time in a number of ways. Some appeared unfazed; they sat still and watched the lesson and appeared attentive. Others become squirmy and restless. Students who struggled with sitting and lecturing did things like stand up and sit, stretch their legs and arms, sigh, look around, look up at the trees, play with their feet on the ground, and turn

conducted after information was presented (often lining up to do so), and then walked in line to the next lesson.[56]

The outdoor classrooms are set up in structured ways similar to indoor classrooms, with a distinct clearing in the forest that serves as the classroom, complete with a podium in center of the front of the space, where the ranger stands and where benches facing the podium hold students who sit. The lessons take place in timed sessions, typically about forty-five minutes in length. While they sometimes vary according to the instructor,[57] the lessons typically began with a 10-20 minute lecture or presentation of information, followed by an activity or demonstration. Rangers frequently bring flip charts, poster boards, visual aids, and other materials into the sites and use them during the lessons. On several occasions, I heard teachers blowing whistles to indicate the end of a lesson, and in one day-long camp, the coordinators blew an excessively loud blow horn to indicate the next lesson time, which could be heard throughout the forest.

Educators used a similar traditional educational structure during several adult EE workshops I attended. In one workshop at an NCESF site, the class took place inside of a wooden picnic shelter structure, with a lit fireplace and a table filled with snacks and coffee. The setting had an elaborate set up, with a laptop and a PowerPoint projected onto

---

around in their seat. Personally, I found some long periods of sitting to be difficult. In one three-hour workshop I attended that was held in an inside classroom at a county park, I found myself sitting and looking out into the treetops at the leaves. The classroom was on a second floor and had an expansive view of a small nearby forest. I was intrigued by a number of squirrels and birds moving throughout the trees. I watched them for several minutes before even realizing I was doing so and not listening to the instructor at all.

[56] As another way of ordering and containing, I observed students in a day camp wearing name tags, where they were put into groups based on animal names.

[57] On several occasions, I observed the rangers speaking for about 10 minutes before launching into an activity; on other occasions, I observed rangers speaking or lecturing for the entire lesson, with a quick 5-minute activity at the end or no activity at all.

a large erected screen, next to an easel with markers and poster boards. Another nearby table held pamphlets, books, pencils, and various forestry paraphernalia.

Scheduled and planned breaks between lessons designate an ordered "break time" and "lunch time," which were conducted in a covered structured area, and I observed several instances where the priority was placed on maintaining the schedule rather than on students' needs. For example, in the morning lessons during one day-long camp held at the forest site, I heard students say several times that they were hungry. I was uncomfortably hungry myself, something I thought strange because it was only 11 o'clock, and I had eaten breakfast. Noon came and went, and it was now 12:45 pm—forty-five minutes after lunch was scheduled. The students again repeated that they were hungry, but were told they had to finish the lesson to stay on schedule. I was so uncomfortable that I decided to break off from the group and go back to the ranger station to eat, leaving the students in the lesson. I felt sorry for the students, who could not freely get up and eat; it seemed their bodily hunger was secondary to finishing the lessons, which were late because the instructors went overtime. Essentially, as this example illustrates, the students experience the visits in a scheduled and structured way, just as they typically do in traditional disciplined classrooms.

Next, the lessons are structured around the goal of presenting, remembering, and recalling information, often with praise and incentives for doing so. A focus on rote learning was evident in the rangers' educational goals, curricula, and in the talking trails. The goal of the lessons and trails often is presented as "to learn," "to understand," "to identify," "to learn more about," and "to want to learn," but to do so in a way where information is collected, memorized, and recalled. This eventually leads to the goal to, as

the southern red oak-tree recording at Jordan Lake ESF states, "leave with all the information you need to be a tree expert." In interviews, rangers said that the goal of forest EE is to give people information "that is based on neutral fact and not opinion." As one ranger said in a lesson, "We're not trying to preach one type of perspective. [We are] trying to give them a well rounded view—how to think not what to think about environmental issues."

To facilitate rote learning, instructors often gave students informal verbal flash quizzes. Quizzes also occurred in the talking recordings, such as in Tuttle ESF's talking-tree trail, where printed quiz questions were attached to the postings (with questions like, "How was I used in pioneer days?") to test visitors on what the recordings said. Rewards and incentives sometimes were offered to students if they participated well and answered questions, including forest-service paraphernalia like Smokey Bear bandanas, rulers, pencils, stickers, key chains, and pencil erasers.

Additionally, instructors and rangers engaged in behaviors to keep children on track. In one observation of a ranger leading a group through a talking trail, while listening to a recording, the students noticed a spider and began looking at it and whispering. After the recording ended, the ranger asked, "What kind of tree is this—without reading the sign on the post?" When the students did not know, the ranger replied, "Ah, you weren't listening." In the same lesson, the students saw a millipede and began ogling it. The ranger picked up the millipede and spoke about it briefly before continuing to the next post. After another recording, when the ranger asked the children a question they did not know, the ranger replied, "You all got sidetracked by the millipede."

Next, similar to traditional disciplinary pedagogical practices, the educational practices I observed tended to be instructor centric. The rangers were the central focus of the lessons, where they assumed an orator role in delivering the lessons.[58] Many teachers assumed a similar role, but typically as the disciplinarian who guided the students to focus on the ranger. During the lessons, instructors asked questions of students, but again, the questions were typically leading yes/no questions instead of open-ended ones.

In this instructor-centric mode, rangers often began lessons with statements such as, "Today I want to talk to you about." In one lesson, a park ranger said, "Today I want to talk about reptiles. How do you define a reptile?" One student replied (without raising her hand), "amphibians." The ranger replied, "raise your hand" and then called on another student whose hand was up. The second child answered, "Scales." In another lesson, a jovial park ranger joked that the students may not want to know what he was telling them. The ranger continued, "but since you're my captive audience, you get to know whether you like it or not." The ranger continued, "No, I'm sure you all want to know so I'm going to share my knowledge with you." When instructors spoke too long and got behind schedule, I observed that the priority was predominately to finish the lesson plan or let the instructor finish speaking. In one day camp I observed, when the instructor had spoken for too long, the chaperone told the children there was no time for bathroom breaks.

Teachers and rangers often assume a disciplined controller and agenda-setter role. In one activity during a "forest management" lesson designed to demonstrate management techniques, a ranger asked the students to pretend like they were trees that

[58] The talking posts assume a similar speaker-centeredness when they ask the visitor to listen, such as one recoding at Holmes ESF that says, "Take a short minute and listen to what I have to tell you."

the ranger was going to cut down. The ranger instructed the students to follow the instructions: “Stay right where you are. I’m going to give you permission to take one step in any direction.” The ranger continued, “I’m going to take you out if you don’t follow instructions. I’m the enforcer. I’ll take you out.”

In another lesson, before the class began, one student asked the teacher to show him a sourwood tree so he could take leaves home to show his parents. The teacher said to wait until after the class and the teacher will. The teacher said, “We don’t have time to do it now because there are a couple of trees I *have* to show you. I have my checklist of things I have to show you.”

Within a traditional disciplined pedagogical model, educators and curricula positioned students as the recipient of information and the beneficiaries of change. During the lessons, students raised their hands to ask and answer questions and waited to be called on, as in many traditional classrooms. They were expected to sit still, listen, and respond in an appropriate way.

I observed the extent to which traditional pedagogical measures were enforced on children, who typically performed the recipient role as they sat. In one lesson, there was a second-grade African American boy sitting next to me. He appeared physically active—moving his feet, picking things from the ground, and looking around him. A counselor who noticed his movement walked over to him and told him “no,” “stop,” and “don’t,” when he did something other than sit and look forward. I felt a sense of endearment toward him; he appeared to be listening—just physically active while listening. In fact, when the ranger said something, the child responded earnestly with, “Mmm hmm,” “yes,” and “that’s right;” he was not answering loudly, but in a barely audible way. In the

lesson, the ranger taught the children how something is spelled and then asked the class, “It’s spelled a little different, right?” The boy next to me replied, “Mmm hmm.” The ranger added: “In China, they wrote on bamboo and silks, alright?” to which the boy again replied, “Mmm hmm.” The ranger asked: “Has anyone ever felt silk?” The boy answered: “Yeah.” The ranger continued, “It’s [silk] soft, slippery, kind of?” and the boy again answered, “Mmm, hmm.”

At a later point in the class, the boy turned and looked at a lesson going on at another site near the pond. He did not appear rude or bored, but just turned around to look. The counselor walked over and told him to turn around, to face the ranger, and not to worry because the class would be going there next, and to pay attention. The boy did as he was told, and then half leaned on me as he watched the ranger. He again picked up several things from the ground—a stick and a rock. Absentmindedly, I picked up a loblolly pine needle and begin to braid it while listening. I glanced over and noticed the boy had copied me—he picked up a batch of pine needles and intently looked back and forth between mine and his and attempted a braid. He looked up at me and smiled. As this example illustrates, teachers and chaperones mostly guided students through a set of proper and appropriate behaviors, where children are to listen and do as they are told.

These components of discipline point to larger systemic modes of disciplining, where teachers discipline children, schools discipline teachers, and larger political and social institutions and ideologies discipline schools. Rangers discipline the site, nature, and students, yet are themselves at the will of their supervisors, their district office, and the forest service. There is a “proper” way to act, teach, and behave as a ranger, as

designated through formal forest service policies but also informal norms.[59] The sites themselves are disciplined by rangers, teachers, lessons, and forest-management practices. Experiences of nature on the sites are not constant or predictable—they vary depending on personal experience and perception, location, climate, season, and weather. Yet, through federal and science-based curricula, the lessons attempt to ascribe a form of consistency and discipline to students' (and rangers') experiences.

Through specific communicative acts, nature, the sites, students, and visitors are guided, ordered, and contained to have a particular kind of experience. Nature and the sites are to be experienced sequentially, where the visitor is told which attributes to focus on. Within a disciplinary organization, rangers govern, order, and contain the sites. Traditional educational practices guide teachers and students alike, with lessons focused on structure, rote learning, instructor centeredness, and students' receiver role. Additionally, the children are to behave as they are expected to in traditional classrooms, contributing to the notion that the learning experience is similar.

Competitive

Rangers, teachers, and the Forest Service frequently referred to and discussed nature with an assumption that nature and people compete with each other for natural resources. Included were the ways in which nature was presented as iconic, esteemed, treasured, and valued. As examples below show, I also observed a number of interactions

[59] As a participant observer on the primary site, I also observed my own reactions to disciplining when I violated a norm in what the rangers came to refer to as my "tofu chili" incident. Toward the beginning of my time, I noticed the ranger supervisor and others often cooked and baked for each other. Wanting to show my appreciation for the rangers' hospitality, I made them vegetarian chili for lunch. The rangers, all meat eaters, appeared not to understand why someone would make chili with tofu, beans, and vegetables, instead of just meat. In a very playful way, I was razzed about the dish during my time at the site, a notion I gradually began to believe meant that they probably liked me.

in which children competed with each other during the lessons and when rangers encouraged a sense of competition among students.

Seeds, pinecones, trees, forests, animals, insects, and nature are framed as competing with each other for natural resources, with competition advocated as a way humans should understand acts in nature. Seeds compete with other seeds, an assertion the loblolly pine recording at Jordan Lake ESF makes: "My seeds quickly sprouted the next spring and my children started a race to see which one could outgrow the other." Trees are depicted as competing with other trees, as a statement by a shortleaf pine recording illustrates: "In most of those areas, I excel over all other pines. Unlike all other valuable pines, when I am young, I have the ability to sprout after fire or cutting." Trees crowd out other trees and compete with each other for survival and productivity, specifically for sunlight, as one tree recording at Holmes ESF states:

> Lots of shade means that all of us trees are competing with each other for every bit of sunlight we can find. I am one of the lucky trees; I shot right up to the sky faster than other trees around me. Look around you and you will see trees that are smaller than they should be. This is because, for the most part, they could not reach the sunlight. In a forest managed for tree growth, such as the trees on the demonstration trail, selected ones are cut and the remaining trees have more sunlight and can grow faster and stay healthy.

Forest management then is advocated as a way to control and enhance natural competition in nature, such as one tree recording at Turnbull Creek ESF notes, "For a pine stand, prescribed burning before seeds fall is the technique most often used to control competition among the trees."

Competition also is talked about through "survival of the fittest" and rivalry narratives, such as one tree recording at the Rendezvous Mountain ESF that notes: "In the forest as in the jungle survival goes to the fittest." During one lesson called "predator and prey," when playing a game to demonstrate the predator-prey relationship, children were asked to act like they were mice, and teachers and parents were asked to act like they were owls and catch the mice. After several mice (children) were caught by the owls (teachers and parents), the ranger said, "All of you mice that are left—you guys are the best. You are the fastest. You are the strongest. You are the smartest, just the best made it." Several children responded by cheering. In another lesson, the ranger noted that trees are "like teams in a sporting event" to refer to how they compete with one another. The ranger continued: "Competition is the key word. Everyone is competing with each other" for sunlight, water, and nutrients.

The notion that nature is competitive occurred in an activity I observed several times called "the competition game." While the lesson varied slightly across the rangers, the following is the lesson's general structure. The game begins with a ranger telling the students that all trees compete with each other. In one lesson, the ranger said, "Somebody's gotta try to be better than the other guy. I'm gonna try to get more water than you, I'm gonna grow better. Trees compete to try to get sunlight, nutrients, and water." The ranger appointed himself the role of the parent tree, and the children were the tree's acorns. The ranger phrased it this way: "I'm going to be the daddy tree and all of you are going to be my acorns." The ranger told the group to get close to him and make a circle around him. The ranger offered several additional instructions, such as "Remember you guys are acorns, so you can't run. Acorns just fall to the ground. They can roll, a bird

can pick you up and drop you somewhere, but no running." Many of the children became excited and squirmed, hopped, and giggled. The ranger also instructed the students to try to get as far away from other acorns when they can because, "you don't want to get close because when we start playing you're gonna want to get all the nutrients for yourself."

As the activity continued, the ranger counted to three, the acorns (children) were instructed to run away from the parent tree (as they "fell" from the tree) before the ranger quickly said to stop. To demonstrate competition, the ranger told the students that they have now planted in the ground and are growing trees. The ranger reminded the students, "Trees can't walk. They can't run. They have to stay there. Your feet can't move. You can't move, but you can bend down and reach down as far as you can." Some children stopped in an exaggerated frozen position. The ranger then pulled out small squares of colored paper—yellow for sunlight, blue for water, and red for nutrients. The ranger scattered the papers around the children's feet, and the children reached down and could only pick up what they could reach, some more aggressively than others. One child said excitedly about collecting all three colors, "I got all of them!" to which the ranger replied, "All right!" The ranger then pointed out that some children had only one or two colors and noted that the other trees competed and got them instead. The "competition game" sometimes continued into a demonstration of forest-management practices, where the ranger then "cut down" some of the trees (children) with a toy chainsaw to thin them out. The ranger then sent the "felled" children to one of three piles—paper, firewood, or timber.

I also noted occasions where children (and adults) competed with each other. In one "Tree Rings" lesson where children are taught how to count a tree's age by counting tree

rings, after a brief lesson, the ranger put the children into pairs and gave them “tree cookies” (sliced cross sections of trees treated with polyurethane to highlight the rings). After counting the tree rings, the children announced how many they counted. Several children boasted, “We got more than you!”

There also were cases where rangers promoted the notion that children are competitive with each other, just like nature. In one “Tree Rings” lesson, to give students an example of competition, the ranger said, “If you put cookies in the middle of the table, wouldn’t you all fight over who gets them?” In another lesson, after telling the children they are going to take a core sample to count tree rings, the ranger told the students that the student who guesses closest to the age of the tree gets to keep the core sample.

I observed and interpreted other competitive framings when entities in nature are held up as iconic, esteemed, treasured, or valued, or idolized as being the “best” or “most” of something. Numerous talking-tree recordings reminded the visitor of how some trees excel over others. The American beech talking recording at Jordan Lake ESF states, “Most of these plants, called herbs, are much shorter than trees. I can grow to be 100 feet tall. Shrubs have more than one woody stem, and none of them are as thick or as tall as I am.” Another recording tells the listener, “In most of those areas, I excel over all other pines,” while another notes, “I can live to be one of the oldest hardwoods on this entire forest. My crown, or top, is best known for its brilliant autumn colors.” The black birch recording at Holmes ESF tells how it is “the best smelling tree in this forest,” while another boasts, “I’m the largest conifer in eastern North America, often reaching 100 feet in height.” At Tuttle ESF, the white pine recording notes that it has, “The license to become the largest pine in the forest,” and another recording depicts its tree as an icon:

"Commercially, I'm the most useful pine in the southern forest because I can grow as tall as a 10 story building and as big around as a water barrel." The longleaf pine recording at Turnbull Creek ESF tells the listener, "You could say that I'm the king of this forest."

Being an icon in nature also takes the form of being ascribed a state tree or state flower status, such as how several pine-tree recordings tell how they are North Carolina's official state tree.[60] Other tree recordings talk about being the "most producing" or "most abundant." Forests are also presented as "Earth's most valuable resource," while being called a stewardship forest in particular in North Caroline "is a real honor." North Carolina is prized for its status as "one of the top 10 stone producing states" while also being "first in forestry." The educational state forests and talking-tree trails are noted as special and "a unique outdoor experience." Even people associated with trees are iconic, such as early 20th-century loggers who are described as "some of the hardest working men of all time." Finally, the United States is presented as exceptional in its forest-management practices. In one observation, a ranger told me that the United States is exceptional in its preservation of nature; the ranger noted, "We're lucky here in the U.S. to have things preserved. They don't in Europe."

Different

Entities in nature are ordered and contained in the way they differ from others, where trees, plant life, insects, animals, and ecosystems are articulated as varying from others around them. The notion of difference goes beyond naming to evoke a different

[60] The tendency to idealize trees through description stems back to colonial exploration. In a "model reconnaissance report" (an exploration document) from 1584 that described North Carolina in that year, Barlowe (1584/1965) wrote that trees are "In incredible abundance … the highest and reddest cedars of the world."

kind of (mostly physical) quality or character. For example, in the loblolly-pine recording at Jordan Lake ESF, each tree on the trail:

> Will tell you something special about themselves so that you'll be able to tell one of us from another—which of us has needles? Which has leaves? Do animals eat our seeds, and are our seeds good enough for you to eat?

As this passage demonstrates, entities in nature are described not just through physical qualities, but how those characteristics differ from others.

Trees are presented as different from other trees based on dissimilar seeds, leaves, smells, textures, and tastes. The shortleaf pine recording at Jordan Lake ESF states that its bark (color, thickness, and texture), "is different from other pines because many small resin pockets are scattered through it." One type of tree can be organized based on how its seeds and leaves differ from another tree next to it. In Jordan Lake ESF, tree recordings ask the visitor: "Can you tell the differences between me and the other trees in the forest?" "Can you tell the differences between me and the tree on the other side of me?" "That's right . . . it's because my leaves are broad and flat . . . they look much different that the leaves on beech and willow trees, don't they?" There is a further difference between tree-growth patterns based on how much sun, water, and nutrients trees have available to them.

After trees are framed as differing from each other, trees then are depicted in contrast to shrubs, brush, and plants. Trees vary from forests, and forests themselves have different areas within them. In one lesson I observed called "New Forests for Wildlife," a ranger told the class that "the forests look different in different places" and that trees look

different based on lighter and darker leaves. The ranger pointed to a poster in the lesson as a visual aid and noted, “Different types of forests are laid out here.”

Forests then differ from other areas (like meadows or grasslands), and all exist within larger different kinds of ecosystems and watersheds. Even the names of trees denote difference, as when the southern red oak recording at Jordan Lake ESF states, “My first name makes me different from other members of my family.” While rangers and recording do discuss some similarity between trees, the visitor is cautioned to ultimately not mistake difference. At Holmes ESF, one tree recording states, “I'm basswood. If you just glance at my trunk you may think I’m a yellow poplar. I am similar in shape and size. A closer look at my leaves will tell you the difference.”

Insects and animals also differ based on physical attributes—different kinds of bears, owls, snakes, insects, and birds abound. In lessons, educators ask visitors if they can tell the differences between things in nature—between a male and female cardinal and between different kinds of owls, snakes, and aquatic insects.

Finally, differences in nature are compared to differences in people. The sourwood-tree recording at Jordan Lake ESF asserts:

> Trees … just like people … are unique. I’m a sourwood tree. Can you tell the differences between me and the other trees in the forest? Like people, we trees can be identified by our outward appearances. People usually are identified by their height, skin color, and hair. Trees are no different. My friends and I are identified by our leaves, bark patterns, and buds.

Additionally, an excerpt from a tree recording at Holmes ESF further illustrates the similar language between different forms of nature and differing kinds of people:

> Can you recognize people you know even though they are some distance away? You probably can. You don't have to see someone's face to tell who it is. It's a person's general shape and the way he or she moves that gives you the clues you need. This is also true of trees even though we don't move on our own. If you learn the general shape of different kinds of trees you'll soon be able to tell one from another even without getting up close.

As this section has shown, the notion of difference is yet another way that nature and humans are framed as ordered and controlled.

Focused on Sight (Ocularcentric)

Last, within a framing of order and containment, the sites are organized in ways that call on specific sensory experiences, most notably through the controlled use of sight. While rangers, forestry, teachers, and curricula do depict senses as important, sight becomes the predominant sense through which to experience the forests. Hearing, smelling, and touching are occasionally encouraged, but sight is the predominantly evoked and used sense on the sites and during the lessons. In addition, students often stated a desire to sense something. Last, spatial elements of the sites and trails create a specific kind of sensory experience, again with an ocularcentric focus.

First, in general, rangers and the sites frame senses as an important and central way to experience them. In interviews, rangers expressed that sensory methods are important for visitors and students to experience and use. The importance of senses and the need to use them is reiterated throughout the sites. One recording at Rendezvous Mountain ESF tells the visitor:

> With your eyes you can discover the different shapes and sizes of trees. You also can discover the hundreds of different leaves shapes and the beautiful colors that some leaves turn in the autumn. With your hands you can discover how the bark feels or how some leaves feel smooth and others feel fuzzy. With your nose you can smell the aromas of pines or a black birch. With your ears you can hear rustling in the breeze, and birds singing in the treetops.[61]

Rangers reiterated the importance of sensory experience in interviews. One ranger noted that senses provide reinforcement to other forms of information, such as in the talking trees: "Most of the trees will repeat their names several times, but if they don't they [students] can read it and listen to it because there is reinforcement once you see it, you hear it, and you can touch it." One recording at Holmes ESF calls the importance of using senses "sensercize" when it says: "Please continue to enjoy a quiet walk in the forest, and pause to listen to what it has to 'say.' Any natural setting has much to communicate. We just need some "sensercize" to tone up our senses." Additionally, in lessons, children are told to "Use your senses and look." Rangers encourage students to touch what they catch in the pond during the "aquatic wildlife" lesson, to touch the pulp during the "paper making" lesson,[62] and to smell the core samples that come from a tree when an increment borer is used to count tree rings.

---

[61] This passage also points to the lack of taste as an important sense and one that is even discouraged. A ranger told me in an interview that when s/he was being trained to identify a sourwood tree, rangers "learned the hard way" by tasting leaves. S/he was taught to chew on the leaf, a practice rangers discourage in children. As the ranger said, "The way we were taught to identify [is] to pull it off [a leaf] and you chew it and it tastes like a Granny Smith apple. Well, we can't mention that to the kids anymore because they would do it. [It's] the funniest thing, you'd turn around after you'd done that and they're all pulling it off any tree and we thought, oh no, you can't do that."

[62] Additionally, during the lessons, when rangers encouraged students to touch something or not, it is overwhelmingly something that has been prepared for them, such as when rangers encourage students to touch tree cookies that have been treated with a polyurethane coating to highlight the tree rings.

While rangers, recordings, and teachers deem all of the senses important, they typically *describe senses for the visitor*, instead of encouraging direct experience. In fact, the primary way visitors are prompted to experience sense is by describing it for them; rangers, recordings, and signs tell people how something looks, sounds, smells, and tastes. In this way, senses are described for visitors, rather than calling on them to actually use the sense. For example, the sourwood recording at Jordan Lake ESF notes, "They [sourwood leaves] have an unpleasant smell when broken and they have a bitter taste—that's why where my name 'sourwood' comes from." In another example, on the "talking-rock trail" at Clemmons ESF, rock samples have been brought in from local queries and placed by the talking posts, and visitors can touch the rocks. In the recordings, the rocks are described, such as sandstone which notes its texture: "I am rough to the touch due to my uneven surface caused by breakage around my grains." The yellow poplar recording at Rendezvous Mountain ESF tells visitors: "Listen while I describe some of the valuable free services that we trees provide," and pignut hickory at the same site adds, "Today if you stop and listen you'll probably hear the birds singing."

I observed students use their senses on the sites without being prompted by rangers. On numerous occasions I saw students independently pick up and touch (and sometimes collect) leaves, rocks, sticks, branches, and flowers (which teachers and chaperones—but typically not the rangers—often told them to put down). I observed

---

Rangers also encourage students to touch prepared lesson materials, such as poker chips that are used in one lesson to symbolize food for mice and pieces of colored paper to symbolize water, nutrients, and sunlight. During the "paper making" lesson, students touched prepared tree pulp and the paper that was made in the lesson. In other lessons, rangers encouraged students not to touch something, as was typically found with stuffed animals (bobcat, owl, ducks), which the rangers argued were beginning to grow ragged from touch, or as one instructor argued, "they get abused by kids." In addition, smells were typically compared with something else, such as when I observed rangers say many times regarding the smell of the tree samples that came from the increment borers: "it smells like pine sol." This is interesting because, of course, pine sol is supposed to smell like pine trees.

children look toward animal, insect, and bird sounds they heard during the lessons. In one observation, I closely watched one child on a talking-tree trail who looked at the post, looked up at the tree, looked to the top of the tree, walked slightly around the tree, and patted the wood and bark. The child stepped back, again looked up, softly touched the bark, brushed his feet on the ground near the tree, bent down to pick up a leaf, looked again up at the tree, brushed the leaf to his face, and again touched the tree. While some students do stand completely still and listen (or are told to do so), I also noted varying degrees of the above student's behavior. Students frequently looked on the ground, patted and poked the trees, and looked far up into the canopy (sometimes so far that they almost fell over). On another talking trail—this time while observing visitors walk it—I heard a visitor talk about the smell and ponder to another visitor that it may be honey suckle or jasmine. Most students I observed also looked, gasped, and pointed at animal life they saw on the trail, and I sometimes saw children smell a tree or leaf or brush it across their face on their own.

Additionally, I heard students vocally express the desire to want to sense something. A common question I heard students ask was if they were going to see or touch any animals during their visit. Before one lesson, a student asked, "Are we going to be holding any live animals today?" to which the ranger replied, "No, unfortunately we don't have any."[63] In another lesson, students found a millipede on a trail, and the ranger picked it up and told how it smelled like almonds.[64] Students clamored to smell the millipede and several turned and said, "It smells so good." Students frequently asked to

[63] Even though the ranger said there were no live animals to hold, directly after this statement, I saw a caterpillar on the ground and picked it up, held it, looked at it, and noted its striking turquoise colors.

[64] This kind of millipede secretes a chemical that smells like almonds when it feels threatened.

touch things such as trees, the stuffed animals used in lessons, paper from the paper making lesson, and tree ring samples.

I felt this desire to sense along with the children. In one lesson, when children used nets to collect aquatic wildlife, I noticed a tree nearby that a beaver recently chewed. I found it to be an amazing sight, with a large exposed hole oozing with sap (See Figure 10). I looked at it, touched the sap, smelled it, and was about to taste it. At that point, I realized a child was watching me. The child immediately came over and asked what it was and if he could touch it. After touching it, the child asked if he could taste it. I became unsure if tasting raw sap was harmful, and I told him we should ask first. I offer this example because it illustrates how aspects of the forest sites contain multiple kinds of sensory experiences, even though sight is the most commonly evoked.

Figure 10. Nature as a Sensory Experience. Sap oozing from a tree that a beaver recently chewed.

In another lesson, before the class began, a child asked a teacher to point out a sourwood tree so he could take leaves home to show his parents. After being shown the tree after the lesson and picking leaves, out of sight of the teacher, the student began chewing them. Without me asking, the student handed me a leaf; I chewed it and felt immediately surprised by the strikingly bitter and pleasant taste—just like a Granny Smith apple. These examples point to how students both use and express wanting to use sight, hearing, touch, taste, and smell, even though rangers and teachers often point them to look instead.

Various physical features of the sites influence senses in differing ways, such as how layout creates a particular kind of sensory experience. In regard to trails and paths, some are made of dirt while others are gravel, pine needles, wood chips, or wooden walkways. These materials create different sounds, smells, textures, and characteristics when walking on them. Gravel appeared to be the predominantly used trail floor material where students frequently walked, and I became accustomed to hearing the sounds of crunching gravel as students walked to lessons—sounds that often overlapped other sounds on the sites.

I made several observations that illustrate how trails influence a visitor's sensory experience, and one in particular happened by accident. On one site visit, I noticed how trails influence smell and even how the air feels on the skin. At one point, I went off a gravel trail and stepped onto the forest floor and immediately noticed that the smell was more intense and the temperature was slightly cooler.

Additionally, on the talking trails, the volume of the recordings changed depending on one's height and the volume. During one visit, while listening to a talking

recording, I dropped my pen. When I bent down to pick it up, I noticed how much louder the recording was, as it was placed at a lower levels for children. In separate observations, I noted how the talking recordings were set at loud levels that were even uncomfortable at times, and I wondered if students—being at a lower level and closer to the speakers—similarly experience them as loud.

Last, from birds to bulldozers, a number of sounds were prominent on the sites and often created what I interpreted to be an interesting overlapping experience. There were ever-present sounds from birds, animals, and insects, such as cicadas, Carolina peepers, and cardinals. When birds and insects sounded in the trees, they could be quite loud at times, and students often looked in the direction of the sounds. Running water through streams and rain falling on trees and leaves were audible. Visitors typically can hear leaves, acorns, fruit, and branches fall to the ground, sometimes creating echoing sounds throughout forest that resemble thumps, crackling, and popping. Trees often blew and rustled, and I frequently heard wind and thunder. The sounds of visitors off in the distance, including those on the trails and in the shelter and picnic areas could be heard. During lessons, it was typical to hear other students in other lessons nearby—a sound that frequently caused students to turn and look. The talking recordings often echoed throughout the trails, as visitors on different parts of the trails pressed them, created an experience where one can simultaneously hear multiple recordings from different directions, almost feeling as if one has multiple voices at the same time going on inside one's head.[65] Dogs being walked could be heard barking, and cars and traffic on local roads and in the parking lots overlapped with helicopters and airplanes overhead.

[65] Feelings like these became one of the many issues that lead me early on to end up in with the notion of schizophrenia that I expand on in Chapter Seven.

Maintenance and construction equipment often was heard, such as chainsaws, mowers, blowers, chippers, machinery, a wood mill, and "gators" (small John Deer two-seater utility vehicles that rangers use to move around the sites).[66] At one site, where an indoor classroom was being built, sounds of earth levelers, tractors, beeping from vehicles backing up, thumps from tractors, and sounds from things being dropping and hit echoed throughout the site.

This plethora of sounds created an overlapping experience, where sounds from the forests, people, traffic, construction, talking posts, and maintenance all intersected in sometimes dizzying ways in the same place. One example from my fieldnotes illustrates the kinds of sensations this can cause. On one talking trail describing fire-fighting machinery, I was listening to a recording telling of the Huey helicopter, complete with live helicopter sounds playing in the background throughout the recording. I noticed a rather large dragonfly land on the trail near the post, while the recording was playing. I observed how simultaneously listening to helicopter sounds while looking at a dragonfly evoked a surreal experience, as the dragonfly's shape looked exactly like the helicopter. Moreover, just as the helicopter recording was fading out and ending, as if on cue, the dragonfly flew off in perfect timing, creating a sense that the helicopter sounds were being set to the dragonfly's flight pattern. I thought that, had I been a child, I may have thought that was magical.

While elements of hearing, touch, and smell are present and described for the visitor, sight was the predominant way of experiencing nature on the sites. An example

---

[66] On one occasion, I had the opportunity to drive a gator after a lesson, evoking a surreal experience. Following a ranger in his truck, I drove the gator through the forest, with my left hand on the steering wheel and my right hand holding onto a stuffed owl in the passenger seat that was used in a lesson. I noticed that being in the gator significantly decreased the feel of the temperature and increased the smell of pine.

can be found in the kinds of sensory words (both as descriptors and commands) used in the talking recordings. In the forest geology trail at Clemmons ESF, the word *see* is used 33 times, and *look* is used 29 times, with a combined total of 62 times where sight is directly discussed. In contrast, *listen* is used seven times, and *hear* is used once. *Feel* is mentioned once as are *touch* and *taste*. This pattern is similar in the other talking-tree recordings that I documented. Additionally, in the forest-geology trail, the only time the visitor is asked to touch something is when the sandstone recording asks the visitor to pick up a handful of sand from the trail (instead of encouraging the visitor to touch the large sandstone bolder that is next to the talking post). Similarly, in the lessons, the students frequently are encouraged to look at something, including the trees, the talking posts, and to keep their eyes on the rangers and the lesson.

In these sensory examples, evoked senses—notably sight and through suggestions, commands, and layout—become a controlled and contained way to experience the sites. Moreover, human-induced sounds often take over the sounds of the forest in overlapping ways. In addition, sight is the most distancing sense—it keeps one apart from what is being observed.

In this chapter, I have illustrated the ways in which framings of organization and containment were present in my observations in the sites. My observations and interpretations also pointed to the singleness of the representation of trees; they are heavily promoted as individual entities that do not appear to be embedded in ecosystems, interdependence, or habitats. While some messages do position trees in relationship to ecology and habitats, are conceptualized primarily as *individuals within* those ecosystems and habitats; there appears to be a rather stark separating out of trees from the interrelated

systems that surround them. In Chapter Seven, I expand on how these framings produce, function, and are instrumental in creating meaning in regard to nature-human relationships.

CHAPTER FIVE: FINDINGS II: PRODUCING AND USING NATURE

In this chapter, I detail a second dominant way that nature is framed on the sites—as an entity to be produced and used for humans. Important to note is that production and utility are exclusively discussed together. Forestry, teachers, rangers, and curricula frame nature as a prolific producing force that ultimately exists for humans (and animals) to use. Trees provide homes for wildlife, prevent soil erosion, enhance water conservation and quality, and give humans unique forms of recreation and aesthetic beauty. Included within this framing are three dominant themes: a) nature is an abundant producer (of trees in particular); b) nature exists for human use; and c) nature is central to industry.

Abundant Producer

Nature, forest, and trees are depicted as abundant and prolific producing beings. First, nature is framed as an ideal and rich producing force. The gabbro rock recording at Clemmons ESF points to nature as an abundant creator:

> The ground beneath us contains thousands of different minerals that make up the substance of our planet. About 200 of these minerals are so useful that we use them to make such products as cars, buildings, appliances, and pencil lead.

Abundance in nature is similarly evoked though the notion of diversity, such as in a lesson called "Aquatic Wild Life" where an abundance of diversity of bugs in the water means the water is "healthy."

Trees are promoted as "fast growing" renewable natural resources, while forests are dense, rich, and bountiful. Trees are notably abundant through their ability to quickly reproduce, making them not only abundant producers, but prolific reproducers, as a tree recording at one site notes, "My relatives and I are also good at reproducing ourselves."

Trees produce an endless amount of seeds, as the loblolly pine recording at Jordan Lake ESF notes, “It takes about 20,000 of them to make a pound.”

Exists for Human Use

Nature is depicted as existing—in abundance—for humans to use. In an interview, a ranger told me, “A forest is like a toolbox. It has multiple uses.” Forests not only produce, but create a plethora of *specific things for humans*, including wood- and rock-based materials, beauty, recreation, something on which to practice forest management techniques, oxygen generators, maintainers of water quality, and an entity that helps prevent soil erosion. Trees keep the air and water clean, serve as an “air conditioner” by reducing heat, and help prevent flooding.

I observed one interaction during a lesson that illustrates how rangers generally frame production and utility, where a ranger asks students what they get from trees:

Ranger: “Do you get anything from trees that you need?”

Child: “Apples.”

Child: “Bananas.”

Ranger: “Apples and other fruits. Anything else?”

Child: “Oxygen.”

Ranger: “One more thing.”

Child: “Leaves.”

Ranger: “What do the leaves do? They give us shade …”

Child: “Yeah, shade.”

Ranger: “… and that’s real important when it is hot.”

Similarly, a tree recording at Rendezvous Mountain ESF shows how trees are perceived in relation to their productivity for humans:

> Listen while I describe some of the valuable free services that we trees provide, such as the removal of carbon oxide from the air and the release of oxygen and water into the atmosphere. A large tree such as myself is also a manufacturing plant. We manufacture wood for lumber, chemicals for medicines and plastics in additions to gums oils and syrups. We also produce fruits, nuts, and berries as food for both wildlife and people.

Production is promoted by discussing the lack of production. In contrast to "valuable forest land," phrases such as "abandoned field," "unproductive land," and "wasted land" refer to a space that does not provide humans with anything they can use, and therefore is deemed problematic.

In regard to wood-based materials, people and parties frame trees as giving people a vast array of specific ingredients and products, or, as a tree recording at Turnbull Creek ESF phrases it, "trees produce more than your Sunday paper." Rangers assume the role of educating people on the products that come from trees, as one ranger told me in an interview: "If someone gets the idea we are promoting forest products, I guess we are." In all sites I visited, a number of signs, displays, and various objects position trees as existing for human use, such as "tree identification signs" that are drilled into trees and can be flipped over to identify what the tree gives humans (See Figure 11).

Figure 11. Producing and Using Nature: Tree Identification Signs. These signs are drilled into trees throughout all six sites. The visitor flips the sign to identify the tree's name and popular uses.

From the data, I pulled an extensive list of things that rangers, forest service literature, curricula, and recordings say come from trees. Specifically, trees are said to provide tools, agricultural implements, and materials for ships and railroads, such as tool handles, mallets, jewelers' blocks, ladders, wheel spokes, hubs, rims, railroad cross-ties, and rail fences. Forests give people lumber, log cabins, high quality plywood, pulpwood, firewood, paper, charcoal, and ways to smoke food. Trees are framed as producers of food containers, boxes, crates, baskets, and water tight barrels for liquid. Furniture, curved parts of chairs, interior home finishing, flooring, veneer, shingles, trim, cabinets, posts, and fences all owe their origins to timber. Even novelty, comfort, and sporting items come from trees, such as newspapers, "your favorite magazine," yard sticks,

clothespins, toys, chewing gum, drinking glasses, cooking spice, spools, Christmas trees, musical instruments, skis, and baseball bats. Trees are also important producers and providers of important chemicals like turpentine, tar, pitch, resin, gun powder, soap, oil for flavorings and medicines, and fuel. Materials like rayon, cellophane, and plastics come from trees, as do boat and ship parts, including pilings, boat construction materials, planking, and river pilings.

In other examples, in one lesson, a ranger said to students, "Who likes Mountain Dew? Who doesn't? The ingredients in Mountain Dew come from trees. So do food, medicine, coffee. Many things have ingredients that come from trees." I also observed a sign near a tree on one trail that read: "Loblolly pine. Born: 1892; It will take 12 trees this size to build an average 5 bedroom house." In addition, visitors to the talking-tree trail at Rendezvous Mountain ESF are even encouraged to identify even more uses on their own: "At home or at school, try a little detective work and see how many different forest products you can find."

Rocks similarly are framed as providing materials for human utility, including those used to make sand, concrete, and cement for buildings, offices, factories, schools, golf courses, playgrounds, roads, and drive ways. Minerals in rocks provide materials to produce toothpaste, paper, paint, fertilizer, glass for windows, cookware, and watches. Rocks help humans generate electricity; produce salt and pencil lead; and contribute to the production of appliances, cars, electronics, computers, and computer chips. The talking-rock recordings diabase and metarhyolite at Clemmons ESF remind the visitor:

> You drink a little bit of one of our state's most valuable mineral resources every time you take a sip of a cola. The ingredient of your cola that gives it its tangy taste is phosphoric acid, made from phosphate rock.

Additionally, throughout the data, I observed a number of examples that relate to children—schools, playgrounds, sandbox, coloring books, Fourth of July fireworks, soda/cola, candy, and computer chips.

Next, trees exist to give humans aesthetic value. From brilliant colors in the fall, to planting ornamental trees in yards, to fragrant blooms and flowers, trees are framed in aesthetically pleasing ways. "Beautiful" trees are "straight," "tall," "big," and "colorful," with "beautiful wood," while aesthetically unpleasing trees are termed "scrawny" and "little." As the American beech-tree recording at Jordan Lake ESF notes:

> I am generally thought of as a tree of unusual beauty … long one of man's favorite trees because of my shade. With my smooth bluish-gray bark, my graceful branches and twigs and my shiny pointed buds, I am as lovely in winter as in summer when I am clothed in a mangle of dark green leaves.

People and parties frame trees and nature in ways that humans can use them to add beauty to their lives, such as planting trees for their autumn fall colors and using them for shade.

Secondary to humans, but still important, nature produces and provides for non-human wildlife. Trees are said to provide homes, shelter, and places for insects, birds and animals to grow and be protected. Trees give food, nourishment, and shade. Forests give wildlife enjoyment and help maintain water quality and oxygen for animals, insects, and plant life. Trees provide nectar to bees, as the sourwood-tree recording at Jordan Lake

ESF says, “I’m a very popular tree with the honey bees, which get lots of nectar from my plentiful white flowers.” The shagbark hickory-tree recording asks the visitor at Jordan Lake ESF to “Look me over … can you see any other way that I can assist nature when it rains?” Essentially, trees are framed in a way that they assist other entities in nature.

Next, individual trees also are depicted as having a special role in assisting human consumption. The sourwood recording at Jordan Lake ESF notes, “Trees are special. We are what’s known as a renewable resource—one that grows back in time. If we continue to replant trees every time we harvest them, then we’ll have no tree shortage.” Notice in this passage how “we” switches back and forth between “we forests” and “we people.” Another tree at Clemmons ESF tells of how it helps provide humans with oxygen, especially when human consumption decreases oxygen supply:

> We sweetgum trees are especially good at producing oxygen. In fact, sweetgum trees use and process more carbon dioxide than most trees. That’s good, because the more carbon dioxide we take in, the more oxygen we produce for you. Since carbon dioxide continues to pour into the air from cars, factories, and your noses, it’s easy to see why trees are good to have around.

Another tree recording at Holmes ESF positions trees as “smog eaters” that help humans by consuming the smog that is caused by humans:

> I'm basswood. Did you know that I eat smog? All trees are smog eaters. If it were not for us trees, the air you breathe would be heavy with pollutants. In addition to absorbing carbon dioxide, which I need to live, I act as a filter to reduce smog in the air. Automobiles, trucks, planes, the furnace in your home, wood stoves, and factories produce many harmful pollutants. Things such as carbon monoxide, sulfur

> dioxide, and ozone are just a few. During my normal leaf cycle, I absorb these poisonous gases, making the air safer for you and for me. I also help clean the air by using my leaves to trap dust and soot particles. I hold on to them until a good rain comes along and washes them away. I also slow the wind so that the heavier dirt particles can drop harmlessly to the ground. So, before you leave remember that I am a smog eater.

As the above excerpts illustrate, humans are framed primarily as users, with trees as unique helpers.

Last, trees are framed in ways that position nature as having a hand in the production of colonization and nation building. Trees are prolific producers of not just products, but also colonial exploration and American independence. Trees are presented as central to colonial England's early maritime and empire-building efforts, such as one recording in the naval stores exhibit at Turnbull Creek ESF: "North Carolina's forests were essential to the wooden ships of colonial England." The message continues:

> Why if it weren't for my grandparents in the 1700s, ships from England would not have sailed. Their pitch was used to make the ship's hull water tight so it would not leak, and tar was used to preserve the rigging that held the sails in place. Around here, barrels were filled with tar and pitch then loaded on ships at the Cape Fear River. That's when they began their voyage to England.

Also interesting, however, are messages that point to how trees helped provide future U.S. Americans with independence from England. Consider the following tree recording at Holmes ESF:

> Did you know that my relatives helped America win its independence from England? Way back in the 1700s the bottoms, or hulls, of ships were made from wood. The American colonists seasoned and used my wood for their ships, because when I'm older, my wood is watertight and very durable. The English navy, on the other hand, was forced to build ships from young, green sapwood, which rots easily. By the time the English had sailed all the way across the Atlantic Ocean, the bottoms of their ships were so rotten the colonial navy could sink them easily. When you read about history, be sure to remember me and my other tree friends. We've helped make America what it is today.

A talking-tree recording at Holmes ESF, though, phrases it best: "You know, the vast forest lands of America are what made colonization of this country a challenge full of opportunity."

Central to Industry

People and parties frame nature in ways that link it to business. Nature, forests, and the sites are linked to industry when companies, corporations, and industries are incorporated into the narratives, such as associations to timber, tobacco, textile, mining, farming, and furniture making. A historical link between forests and industry was an additional common theme from the data, and I found numerous companies and corporate sponsorship promoted on the sites. Moreover, trees, forests, and nature are linked to commercial timberlands and timber extraction.

To begin with an example that illustrates a connection to industry, during one lesson I observed a ranger conduct an activity to show what trees can give humans, including a relationship to specific business and products. After telling the children to

pretend they are trees, the ranger began simulating cutting down the trees (children). The ranger stated, “We need some more houses,” and simulated more cutting. The children appeared excited, and a few giggled and squealed. The ranger stated, “We’ll get a Harris Teeter [grocery store] going on in there, maybe a Kruger’s [store] and then, oh, we’ve gotta have a school” and simulated more cutting. The ranger asked a child, “Are you going to be able to wear that jacket for the rest of your life? No. You need to go to Kohls [department store].” The ranger continued: “We need to make stores,” and, “Maybe get a Target going on in there so you can get some clothes,” and, “Oh, man, we’ve gotta have ourselves a Wal-Mart so I can go get me a fishing rod and some ammo.” Interesting to note here is how these comments point not only to industry, businesses, and commerce, but to national chain corporations in particular.

The ranger continued by asking the students, “Have you ever eaten a meal outside of your house?” The students did not answer and appeared confused, to which the ranger replied: “Are you kidding me? Have you ever been to McDonalds?” The children nodded and the ranger continued, “There you go!” The ranger advocated the further need to use the trees to produce police stations, fire stations, and a donut shop. After stating the need for trees for houses, furniture, and paper, the ranger asked what they were going to do with the trees left standing: “What if I burned you all up? Would that be a waste of the resources?” The ranger answered the question, “Yes. Leave some trees to hold onto the soil.” As this observation illustrates, trees are primarily framed in ways that give people homes, restaurants, stores, clothing, and fire stations—all ways of consuming wood through products, but also ways of blending commercial consumption with housing and clothing.

Forests provide not only products for individuals, but also raw cash and ways to help the economy. As a recording at Turnbull Creek ESF says, a forest "pays in more ways that one." Forestry is positioned as "an important part of North Carolina's economy," contributing to employment in a number of sectors. At Clemmons ESF, the eastern red cedar recording notes:

> This 500 acre forest, part of which you saw along this trail, has earned over $100,000 in the past three decades. How? By producing 7,000 trees for pulpwood or about 700 tons of pulp … enough to print 800,000 copies of the news and observer … Those cedar trees were used for fence posts, and sold for $250. It was a good feeling to know this old field had finally earned some money again.

The Gabbro rock recording at Clemmons ESF adds, "By using them [rocks] we are following a long history of living well from our planet's mineral resources."

There was a discernable theme of the historical link between forests and industry in North Carolina. The state has strong historical ties with timber, tobacco, cotton, farming, mills, and textiles; the NCESF sites and lessons discuss how those industries began.[67] Trees are evoked in a historical discussion about how industry formed in the state, such as the sweetgum recording at Clemmons ESF which states, "In our state, I was helpful during the early development of the textile industry." One recording at Turnbull Creek ESF went back even farther in a discussion of early colonial land grants:

> [Turnbull Creek ESF] was named after Thomas Turnbull, an early settler in this area. Records show he was given eight hundred acres of Bladen County in 1749

[67] Many of the ESF locations were once more remote, but housing developments are starting to appear nearby. Several large aerial maps in one ranger station shows housing developments bordering the site, along with a large transnational gas pipeline that runs under the forest and developments. A ranger told me that a great deal of soil run off from the development came into the forest, but the forest service could not find anything that was illegal about the development or the run off.

> by the English King George II. When Mr. Turnbull arrived in Bladen County, he operated a sawmill and a grist mill, both powered by the flowing waters of Turnbull Creek, and both very important to the early North Carolinians. Well, I hope you enjoyed the brief history lesson. As you walk along this trail, think about the many products both you and your ancestors use that comes from the forest.

Essentially, European countries allotted previously unowned land to people through land grants, sale, and migration, and people began heavily farming and logging the land. One sign in the forestry center at Tuttle ESF shows early farming efforts that let to increased industry:

> As the new cotton industry flourished, textile mills appeared across much of North Carolina. Between 1900 and 1930, North Carolina led the nation in the production of finished cotton goods. The new mill jobs caused many people to desert their farm fields, which then grew back in field succession stages, reverting back to the forests.

In fact, all six forest sites I examined have histories associated with logging and farming. At Holmes ESF, a sign on a trail identifies it as an old logging road. At Clemmons ESF, one tree recording tells of how the land was once used for growing corn and, "If you look closely, you can still see the old plow rows along the hillside. This barbed wire in my trunk was part of a fence put up around that field to keep the cows out." Another tree at the same site adds that the farming fields became forests after "people planted the trees after they stopped farming the land." The tree planters referred to in this passage were associated

with the forest service that, with the help of the Civilian Conservation Corps,[68] turned the area into a tree nursery. The loblolly pine recording on the site details its own "birth" in this history:

> I was born in 1942 in a nursery and was planted on this spot the following year. My friends and I are known as a pine plantation because we were planted in rows so we could be taken care of while we were young. You may still be able to make out the rows, even though some of us have moved to new homes.

Next, business, corporate, and commercial sponsorship can be found on the sites and in materials used in the lessons, where mines, quarries, home improvement centers, power companies, and phone companies are said to have provided materials and labor to constructing the trails and areas. Corporate sponsorship signs include one at Rendezvous Mountain ESF that reads, "Lowe's. Proud to support this community project" and a sign at Clemmons ESF that says: "This boardwalk was built with materials provided by Lowes of North Carolina." Booklets used in one lesson include sponsorship statements on the bottom of the front cover, including United Way, Chatham County Beekeepers Association, and Fox-Fire Taxidermy (See Figure 12).

[68] The Civilian Conservation Corps ("CCC") was a part of Franklin D. Roosevelt's post-Great Depression New Deal legislation, from 1933-1942. The project provided unemployed men with work and training in conservation and natural resource development. The CCC fulfilled two functions—employing men as an effort to jump start the economy after the Great Depression and began a federal natural resource conservation program.

Figure 12. Commercial Sponsorship. Top, sponsor list and sign on the "talking-rock trail." Middle, sponsorship signs at two sites. Bottom left, teaching materials for a day-long camp at one site (the list of sponsors are on the bottom). Bottom right, a talking-tree trail sign.

Telephone and power companies also were instrumental in building the talking posts, and they are thanked throughout the sites. A placard on a Tuttle ESF talking tree post reads: "Tuttle Educational State Forest recognizes Bellsouth & Bellsouth volunteers for providing their time, talents, and materials to modernize the 'talking tree' trail."[69] The talking-tree trailhead sign at Clemmons ESF notes, "NCDFR thanks CP&L [Carolina Power and Light Company] for its corporate partnership of the talking-tree trail … CP&L graciously provided funds to update and improve audio equipment used on our trail." In an interview, a ranger told me how the local telephone company originally helped set up the poles for the talking-tree trail at Jordan Lake ESF, and a grant from Carolina Bell was also instrumental.

Mining and quarries similarly are linked to Clemmons ESF and are incorporated into accounts of rocks. Signs and postings at Clemmons ESF thank a number of mines and quarries for their donations, such as a main sign near the trail entrance that thanks a list of "contributors for their donations," including Brandco Products, Inc., Guy C. Lee Company, Lowe's Company, and Wake Stone Company. Almost all of the talking-rock post signs thank companies, whose names go directly under the rock name, such as "Limestone, Donated by Martin Marrietta Aggregates, New Bern Quarry." Donations by businesses are mentioned in several of the recordings, such as one talking-rock recording that notes:

> Every day, trucks loaded with stone, sand, or gravel leave quarries and plants where they are produced and travel to construction sites where they are used. The

[69] The talking tree devices themselves have an interesting history. The first devices were 8-track tape machines that were hooked up to car batteries, placed in trash cans, and buried in the ground. Telephone and power companies then helped wire and power more elaborate devices.

> gravel in this trail came from a huge rock quarry just three miles from Clemmons Educational State Forest.

Last, there is a link between the ESF sites and commercial timberlands and timber extraction. A recording at Turnbull Creek ESF (which is next to the Turnbull Lumber Company) notes: "Of the state's thirty- two million acres of land, some sixty-two% is forest land. Commercial timberlands account for about nineteen million acres. Most of this is owned by individual citizens, not forest industry or government." Rendezvous Mountain ESF's "forest logging history trail" pays homage to the logging industry, including life-size examples of logging shacks, saw mills, and logging operations. The two talking mules— "Francis and Elzebra"—are presented in the context of how humans used their labor in forestry.[70] The mules are physically hitched up to a cart and talk of their hard work: "I'm just plum tired. We've been pulling this log cart since 6:30 this morning. We won't get done 'till it gets dark tonight." The importance of mules to logging is further illustrated as one mule says, "You might say, the trees are what hold us together day to day." North Carolina is talked about as a high wood-producing state, where harvesting timber for wood products like paper is big industry. A talking-tree recording at Rendezvous Mountain ESF further explains how proper forestry management is essential to logging:

> Sometimes streams aren't protected when the forest is logged and soil erodes into the stream and this causes saltation which chokes the fish and makes the water unfit to live in. Streams can be protected during logging if best management

[70] Interestingly, "Francis the Talking Mule" was a *Mister Ed*-like character in a novel that featured an experienced Army mule and a soldier whom he befriended. The character was then featured in seven movie comedies produced by Universal Studios in the 1950s. The films had titles such as *Francis*, *Francis in the Haunted House,* and *Francis Joins the WACS.*

practices are used. These so called best management practices include building bridges over streams and having a buffer zone of trees around the streams to keep soil from washing into it.

In this way, by needing products that come from trees, trees are deemed as important entities—not because they exist as a life form, but because they exist for humans to use.

CHAPTER SIX: FINDINGS III: RESISTING CONSTRUCTIONS

Chapters Four and Five illustrated how rangers, teachers, curricula, and the forest service constructed nature and human-nature relationships within specific ordered, contained, and production/consumption frames. Yet, I observed instances where children and adults appeared to be resisting, countering, and questioning these framings. While many were subtle, resistance was central to my observations and sharply stood out to me. I interpreted alternative and oppositional framings in four specific ways: a) expressions of awe and wonder; b) acts of resistance and autonomy; and c) "when I was young" (adults' recognition of a problem through stories of their childhoods). I noted several examples of resistance in the previous two chapters (such as children picking up things from the ground). In this chapter, I describe these kinds of examples; in Chapter Seven, I expand on their possible implications.

Performing Resistance and Autonomy

Students appeared to work around and counter dominant framings with expressions and behaviors that directly or indirectly challenged what they were experiencing. During the lessons, students frequently answered questions and reacted in ways the instructors did not expect.

In one of my early conversations with a ranger, the ranger indicated that children often ask in surprise, "Why do you cut the trees?"[71] It turns out I observed this question during my first and numerous additional observations. In one observation, when a ranger asked, "What are trees scared of?" a student answered, "Someone chopping them down." The ranger affirmed the comment before deflecting it by saying it is mostly things like

[71] The ranger continued that they have to explain to the students that it is good for the trees not to be so close together.

insects and weather that trees are afraid of and that bark helps protect trees from these elements. Several rangers told me a story several times of something a student said during a "Predator and Prey" lesson. The ranger asked for an example of a predator, to which one child answered "Mike Tyson." In one telling of this story, the ranger said the child smiled and "knew exactly what he was saying." The ranger and teacher chuckled and the ranger affirmed that, yes humans are also predators because we eat meat.

Direct verbal contradictions to instructors' questions were another type of countering behavior I observed. In one "Tree Rings" lesson, the ranger asked, "How can I find out how old these trees around us are?" A child replied, in a sincere tone and facial expression, "You don't." The ranger added, "But, we need to know" to which the student answered, sarcastically, "You cut it down." On another occasion, when a ranger greeted students with "Good morning. How is everyone?" several children replied, "Bad." The ranger asked the students if they learned anything today in the previous lesson. There were several affirmative nods, but several children answered, "No." In this situation, the teacher interjected: "Yes, we have learned a lot today. If you were listening, you should have learned a lot about trees." One student then said, "No, really, no, we haven't even learned our ABCs or anything."[72]

In lessons, children sometimes directly questioned what the instructor said. In one "Predator and Prey" lesson, during an activity when students were acting like they were mice, after killing the mice, the ranger told the children, "Pretend you are back alive, all the mice are back alive" to which one student asked, "How could they be back alive?"

---

[72] Adults handled countering acts in several ways. Some responded by becoming more aggressive and assertive, causing the student to give in. Adults sometimes also subverted resistance by reframing things. In one "Tree Rings" lesson, the ranger asked the student if they like to count. One student replied, "No." The ranger then asked, "Do you like to count money?" to which the student replied, excitedly, "Yes!"

The ranger answered: “Because it’s a new game” to which the child commented, “That’s very weird.” In another lesson on tree identification, the instructor was engaging the children in a pop quiz to name the leaves they collected. The instructor asked, “What is this?” to which several students answered “grapevine” and another answered “heart tree.” The instructor said grapevine was correct and reminded them how to identify it by looking at the stem. The student who answered “heart tree” said, “Well I call it a heart tree. Or a lily pad.” After looking at the sample, I noticed that the leaves did, in fact, look like hearts and lily pads.

In addition to verbal contradictions, students behaved in ways that appeared to challenge adults and dominant framings. In one observation, a teacher told a student, “Don’t drag your feet on the trail. Pick up your feet.” One child literally picked up her foot, to which the teacher smiled. Hand raising was another type of act where students did not always follow the dominant framings of discipline. I frequently observed instructors, rangers, and teachers tell children to hold their questions and wait. I saw students sometimes ask questions anyway, without raising their hands or asking to speak. I also saw students raise their hands and keep their hands up, despite the fact that the rangers did not call on them. On occasion, this interaction took the form of a sequence of events: the ranger lectured, students raised their hands, the ranger kept speaking, and some children kept their hands up even though rangers appeared to ignore them. Then a student would ask or say something without raising a hand, to which the ranger was typically obligated to respond.

I additionally noticed occasions where students appeared to use their sight to look elsewhere during lessons. Students were often told to look at the instructor, but some

looked elsewhere, into the forest, the trees, to the ground, and at wildlife. In one lesson, I noticed one child look up at a plane flying overhead and then over at construction going on in the site, while the ranger talked about how to make paper.

I also observed instances where adults countered, resisted, and questioned dominant framings, specifically among the rangers.[73] As I previously mentioned, in one interview, a ranger told me of recent talk by the district office to cut down an old stand of trees on the site. The ranger outwardly opposed the idea, arguing it was an old and beautiful stand. Even after a ranger from the district office began calling the ranger a "tree hugger" for opposing the idea, the ranger still expressed disagreement at cutting down the stand. In another interview, while the talking trails encourage students to walk the trail at a quick speed, one ranger told me "What I hate is when they run from one tree to the other just to press the button to get through the trail." In another example, when two male rangers were talking in a particularly graphic way about hunting and fishing, one female ranger said, "Why do you guys have to be so violent?" As a last example, there appeared to be resistance among some rangers and the increasing tendency to build indoor classrooms on the sites. While some rangers advocated new indoor structures, a few resisted them.

Awe and Wonder

[73] Important to remember is that rangers hold multiple positions, experiences, backgrounds, and opinions. Rangers do have multiple and varying views on EE and their role in the process. Some rangers are hunters, while others directly oppose hunting. Some rangers believe students should be quiet during lessons, while others think it is acceptable for students to express themselves. Some rangers think the sites should be logged, while others do not. Some rangers think it is appropriate to kill bugs inside the ranger stations, others physically put them outside. Perhaps forest management serves as a way to link the rangers together, because they do all typically advocate and agree on conservationism and forest management as ideal ways to conceptualize and treat nature.

I observed numerous instances where people responded to something with a sense of awe and wonder—students, chaperones, and rangers alike. People behaved, spoke, and reacted in ways where they expressed admiration, respect, and amazement at what they were experiencing at the sites. This led me to think that, while the sites are heavily framed, it is possible to leave the realm of analytical ordering and experience astonishment and imagination. While the sites themselves were typically logically framed and did not evoke emotion, there were instances that prompted awe, such as the shortleaf recording at one site, which calls on the visitor to express "fascination" and "curiosity" as it explains: "In the forest, life is everywhere—above your head, beneath your feet, all around you. And the fascination it can hold is limited only by the time and curiosity that you want to give to it." The materiality of the forests can further allow wonder, with sights, smells, textures, and sounds that can lead to awe. In the presence of an ordered and contained environment on the research sites, acts of awe appeared in sharp contrast to order and containment.

Before proceeding, important to note is that notions such as awe and wonder can be interpreted as examples or manifestations of the othering of nature, where entities can be perceived in the framing of a "sublime response" (Oravec, 1981). Revisiting Oravec here is useful in illustrating the duality of meaning that the sublime response can evoke. In contrast to one definition of the sublime response (humans situated within nature through a mode of awe that enables othering), another way to conceptualize the sublime is through the notion that one's own significance as a human is dwarfed within nature. Oravec (1996) noted the sublime can be a positive quality that "can work to instill hope and energy in environmental causes" (p. 68) and arouse political action. Similar to this

later definition, I argue here that responding to the natural world with awe and wonder need not denote the presence of othering in a negative way; one aspect of awe is the locating of the human within nature, and not separate from and superior to it.

First, students often expressed surprise and astonishment in response to something they encountered and did so without being prompted by adults. I frequently observed children pointing to something and excitedly announcing it to others—"Daddy long leg!" "A deer!" "A spider!" "Butterfly!" "Squirrel." "Bird." "A flower!" I overheard students say, "This is fun," "This is neat," and "I like this." Upon arriving at the site and exiting the bus, I heard students point to a helicopter and say, excitedly, "Helicopter!" In one observation, one child exclaimed, "Daddy long leg!" to which another child responded, "I found another one! I found another one!" A third child added, "This is going to be super fun." In the same observation, when the students got to the entrance of the talking-tree trail for a guided tour, one child said, "There it is! The talking-tree trail!" and other children responded, "Ohhh" and "Talking-tree trail!" Yet another child asked, in surprise, "Talking trees?" The child's peer pointed and said, "It is way back there." The student asked, "What's a talking tree?" The teacher then began talking over the children with, "One, two, three, we're ready to listen" and the children grew quiet. Additionally, in interviews, many forest rangers and officials expressed that the ideal reaction they like to see in students is surprise and excitement. As one ranger said, the goal is "to see the kids sitting there with their open mouths looking at it going, wow, that's cool."

In lessons where children were guided through talking trails, I frequently heard and saw them marveling over something. On one occasion, while a talking-tree recording was playing, the children spotted a millipede and gasped. Like a chain reaction, several

gasps sparked a ripple effect, where children gathered around, gasped, pointed, and began exclaiming what they were seeing and whispering to each other about what it was. In the same talking-tree trail tour, with a sense of curiosity and wonderment, children often looked up at the trees that were being talked about, touched them, pointed, and whispered. In another tour, one child said to another, "It's the one right there. Touch it," to which the second child touched the tree and responded, "Awesome." I occasionally observed students step off the trail, typically outside of the view of the teacher. In one particularly memorable situation, I observed one student who physically crawled into the branches of a low-lying tree and crouched there, with a calm and contented expression on her face. The adults had not seen her do this, and she smiled at me when I walked by.

In "Tree Rings" lessons, when rangers displayed the "tree cookies," a common reaction from the children was "whoa," "wow," and "that's cool." Using an increment borer in the lessons appeared to spark a sense of interest. Frequently, as the ranger took students to a tree and gathered them around it, when the children saw the sample being pulled out of the tree, they respond with "oh," "ah," and "wow, that's neat." In another lesson on snakes, on their own accord, and after being told to listen, one child asked the ranger, "Can a snake eat a snake?" When the ranger replied, "Yes, we have what is called a king snake. It is a snake that eats snakes," the child responded, "Wow." In another lesson, one student interrupted the ranger and pointed upward and said, in surprise, "Look at that geese *[sic]*!" Several large herons were flying away and upward. All of the children looked up and many pointed and gasped. Another child said, "That was a big bird," and another student added, "That was a geese."

Despite frequent acts of adult discipline toward students and despite the organized and confined environments, I observed children engage in imaginative conversations and interactions, which I perceived as being counter to the logical ways the sites are framed. For example, in one guided talking-tree trail tour, at the end of the trail, I observed a small group of children talking. After two children reached up and grabbed a leaf, one child said, "That was quick" and another child added, "That was fun because I saw a real live frog." Another child responded that the frog "was so small, usually frogs are so big." One child added, "Tadpoles are smaller," to which another child responded, "Yeah, tadpoles are smaller." One of the children continued, "Yeah, because they turn into a frog. I just wonder how they do that." Another child pondered: "They are in the water and they are there for a month or a year or something like that and then they turn into a frog." The children pointed to the ground and excitedly expressed that they saw a frog, gesturing toward it and saying "frog, frog" before walking on. When I looked to the ground where they were pointing, I saw a spider.

In addition to the structured lessons, I observed a number of situations on the sites where visitors responded with awe—both children and adults. In one impressionable observation, as I was observing people walk self-paced on a talking trail, I saw in the distance two adults and two children. They were standing near a talking post, but had not yet pressed the button. I noticed the four were extremely quiet and still, which stuck me because they were previously talkative. As I watched them, I noticed they were intensely looking at something in the forest and were trying to be quiet. I paused and wanted to see what they were looking at. The young boy's mouth was agape and his body frozen, and one adult slowly tipped toed from behind the two children to stand where they were. I

turned and saw an enormous adult deer approximately 100 yards from me in the forest. I instantly felt a sense of awe, as the buck was standing—with huge horns, looking right at me and chewing. I walked right past it and did not notice it. I looked again at the two adults and two children, all of whom remained stone still, looking in awe at the deer, and we all stood there for approximately five minutes before the deer walked off. The four people talked again, pressed one of the recordings, and then quickly walked away, with the recording still running.

"When I Was Young"

Adults—specifically those over the approximate age of thirty—often recognized and expressed concern over the changes in children's experiences with nature, especially compared with when they were young. I termed this type of discussion "when I was young" because the comments often began with this statement. I conceptualize "when I was young" as a type of countering or resisting because it can illustrate how adults recognize that, despite dominant framings of the sites as "outdoor" "places" that attempt to reconnect children with nature, there is still something amiss when it comes to the way children now spend time. While adults do not quite know what to do about this "problem" and, as I later argue, while these sites may not contribute to resolving this issue, it appears to be a starting place for adults to begin to conceptualize broader nature-human issues. Additionally, it appeared to be a way for adults from different positions to relate to each other. Louv (2005) articulates this well: "When people share these stories, their cultural, political, and religious walls come tumbling down" (p. 354).

Dominant messages in forestry and educational curricula start from the assumption that there is a problem, where children lack outdoor experience and need to

be taken outside to reconnect with nature. For example, Project Learning Tree (PLT) curriculum literature (the national and international curricula where rangers get their lessons) advocates that there is a problem. PLT works from the central assumption that children are disconnected from nature and their lessons prescribe getting back, within a specific natural science approach.

"When I was young" took the form of specific—and eerily similar—comments from rangers, teachers, chaperones, and parents. Rangers talked of how children are more urbanized, with video games and computers. One ranger told me that children's visits to the site are often their only opportunity to "come into nature." On occasion, rangers called this nature-deficit disorder, "last child in the woods," and they frequently discussed how children do not play outside much anymore. In interviews, rangers frequently talked about how they used to freely play outside as children, including playing games and riding bikes with children in their neighborhoods. As one ranger said in an interview, when telling a story of how children "freaked out" at a puddle:

> They [the children] were doing all they could to avoid a puddle. And I turned to the teacher and I said, you know, when I was a kid, I'd go right through the middle of it. It just blows my mind that these kids don't want to just go stomp in a puddle. These kids were avoiding a puddle.

These kinds of statements are often followed by how today's children greatly differ from past generations.

Adults talked of their personal experiences when they were young, often in a nostalgic and reminiscent way. When other adults were present and someone was speaking of "when I was young," other adults frequently nodded in agreement. In one site

visit, the ranger introduced me to the teacher and told the teacher "Don't worry about her, she isn't a stranger." The teacher smiled at me and then began talking about how fearful people are now with children. The ranger and teacher began talking about how "kids don't go outside anymore" and how "it has changed since we were kids."

In one situation, when I was taking pictures on the site, a child asked me why I had a camera. Slightly paranoid of IRB issues, I explained that I take pictures of the space and trees, but not of the children. The counselor standing near us began talking about how it is "too bad that people are so paranoid." She talked about how childhood has changed and "it's very sad." The counselor told of her life when she was young: "We'd climb trees, whatever, no problem. You'd get on a bike and go everywhere. We'd cover the whole city in one day." While telling this story, I noticed one student said to another, "There's a bug right there, near your foot" to which the second child jerked back, looking for the bug. The counselor continued, "They really miss out when everything is so organized. When they're home it's computer, TV, game boy."

Interestingly, at this point in the conversation, the ranger, who was working with a group of children on an activity, brought the lesson to an end. A few students told the counselor that they were hot. Without skipping a beat, the counselor responded, "Shh, quiet down. No whining, I don't want to hear all of this whining. I want you to listen. It hurts people's feelings when you don't listen." When getting ready to leave the outdoor classroom, the counselor—who previously talked about how things are now too organized and fear based—said to her group of children: "Follow group four. Turn around and follow group four. Stay behind them. Don't mix in with them so I can count you." One child then interjected that she knew of another way to go to the next class, and

pointed to a nearby path. The counselor replied, “I know but they want us to go this way. We don’t want to get lost.”

As these kinds of interactions illustrate, adults—in the above case, a counselor—are able to identify that something is amiss, that children’s time is too structured, that people are too afraid, and that childhood drastically differs from one’s personal experiences growing up. Yet, the counselor herself engaged in organizing and disciplining the children by putting them in line, giving them organized instructions, and responding in a fearful way about getting lost in the forest. While adults frequently revert back to and perform the very practices they be cry, I conceptualize “when I was young” as a form of resistance because it is one way people can—and do—begin to talk about the issue. “When I was young” is the beginning of a form of interruption, where adults recognize something is amiss and reflect on how and why.

As the examples in this chapter illustrate, students, chaperones, and rangers behaved, spoke, and reacted in ways that resisted dominant and rigid framings. While the forests (and human-nature relations in them) are constructed in a particular way, people can exit these framings and experience—even momentarily—and engage in alternative ways to be and think. The forests can evoke a sense of wonder that can lead to appreciation instead of Othering. In the presence of an ordered and contained environment on the research sites, these alternative ways of conceptualizing and being stood in sharp contrast to the order and containment framings that I presented in Chapter Five.

In sum, Chapters Four, Five, and Six conceptualized and presented three themes that illustrate how environmental meaning has been framed and resisted across the

research sites. People construct nature as organized and contained, as a tightly controlled entity that is ordered through practices such as science, naming, place, competition and gender. Nature also is framed as produced to use, where trees exist in abundance and are central to commerce. Parties resist constructions and challenge dominant framings through acts of resistance, expressions of awe, and discussions of "when I was young." In Chapter Seven, I will use these themes to form three theses that rearticulate human-nature binaries, retheorize NDD, and point to larger findings. I explore the implications of these themes and what they produce and perform about human-nature relations.

CHAPTER SEVEN: DISCUSSION AND CONCLUSIONS

Chapter Seven begins by briefly summarizing this project, including an overview of the literature, methods of data collection and analysis, and a summary of preliminary findings. Then, based on the three analyses offered in Chapters Four, Five, and Six, I develop three overarching theses to provide theoretical interpretations of the findings, how they are situated in extant literature, and how they contribute to retheorizing nature-culture relationships.

In the first thesis, I argue that Chapter Four's theme of nature as organized and contained promotes a *get close-stay away* dialectic, where dominant framings position nature as an approachable yet inaccessible entity and encourage traditional human-nature dualistic thinking. In the second thesis, Chapter Five's theme of producing and using nature promotes a *production-consumption* context and cycle, which produces commercial appropriations of nature, the production of trees, and a number of other outcomes. Third, Chapter Six's theme of resisting constructions leads to a third thesis of what I call *interrupting boundaries*, where humans and nature actively complicate the human-nature binary and disrupt dualistic thinking.

After detailing the three theses and their implications, I then make the move to situate this study in larger popular and academic conversations by rediagnosing nature-deficit disorder (NDD). After summarizing and critiquing NDD, I argue that the *get close-stay away* dialectic and the *production-consumption* context point instead to schizophrenic-like perceptions and relations with nature that contribute to alienation, a notion that *interrupted boundaries* can resist. Essentially, advocating for children to "go back into nature"—a major tenet of environmental education (EE) and a central belief in

my research sites—discursively sidesteps[74] important issues that contribute to environmental estrangement among humans and lead to environmental degradation. In keeping with the goals of some critical research, this chapter ends by offering recommendations for place-based EE to deconstruct the human-nature binary.

Project Summary

The purpose of this study is to provide a participant observation case study to explore how rangers, teachers, curricula, and forestry teach students about nature-human relations in the North Carolina Educational State Forest (NCESF) system. Three research questions have guided this project. First, how do rangers, teachers, forestry, and curricula frame and construct nature and the role of humans in it? Second, how do people resist dominant frames and create alternative ways of conceptualizing and being in nature? Last, what are the possible intersections and implications of what is being constructed, produced, and performed about human-nature relations in this context? In addition to these questions, I contextualize this project within larger cultural and educational practices and conversations.

A number of rationales and extant bodies of literature situate this project. The urgency of environmental degradation, how people in the United States largely conceptualize environmental issues through dualistic thinking, how environmental issues relate to children, and the NDD movement's way of thinking about the issue make this case study valuable and timely. Moreover, this study is located within four pertinent bodies of extant literature: a) the social construction of nature; b) communication and

[74] I borrow the term *discursive sidestep* from Wolfe (2007), who argues that President George W. Bush used security to discursively sidestep public environmental controversy in an environmental policy address.

human-nature relations (environmental communication); c) consumer and commercial appropriations of nature; and c) EE.

For this project, I spent approximately five months both on and off the sites, amassing a variety of data. While the majority of my participant-observation research took place in one site, I traveled to the six sites to collect data. I used fieldnotes, video and audio recordings, and photography to document the sites, and I interviewed rangers and forestry personnel. I gathered more than 200 single-spaced typed pages of fieldnotes of observed communication practices. I recorded and transcribed messages from sixty-one talking recording posts in nine talking trials across six forest sites, totaling 303 recordings and 135 single-spaced typed pages of transcripts. I conducted and analyzed 12 in-depth interviews with rangers and officials, each interview averaging one-and- one-half hours in length. I collected hundreds of artifacts, including pamphlets, educational materials and literature, curriculum documents, legislation, and forestry materials. The artifacts I examine also included over 1100 photographs that I took.

Chapter Two outlined the methods used in this study. While collecting, coding, and analyzing the data, I used Strauss's (1987) grounded-theory approach, while incorporating both Emerson, Fretz, and Shaw's (1995) practices and generative rhetorical criticism (Foss, 2009). I employed open, analytical, and focused coding to develop and analyze the codes and categories that emerged from the data. Going back and forth between theory and data, I generated and organized the codes and analysis that led to the three theses I present in this chapter.

Chapters Four, Five, and Six conceptualized how people and parties frame and resist environmental meaning in the NCESF system. Chapter Four presented the frame of

organizing and containing nature, where people and parties frame nature as an ordered and tightly controlled entity. Chapter Five introduced the frame of producing and using nature to depict how people and parties construct and conceptualize nature as an entity that is made for humans to use. Chapter Six outlined resisting constructions and offered examples from the data to illustrate how people question and challenge dominant framings.

Rearticulating the Human-Nature Binary: Three Theses

This section introduces three over-arching theses that I interpreted from my analysis. These theses address my research questions—how is nature framed, how do people complicate these framings to create a more expressive co-presence with nature, and what is being constructed, produced, and performed about nature-human relationships in the process? In different ways, each thesis rearticulates human-nature relationships and offers a descriptive exploration of how the binary is constructed, consumed, or complicated. After detailing each thesis, I point to the possible implications of these ways of conceptualizing and relating to nature. In sum, the purpose here is to use the three theses to examine and further articulate nature-human relations and retheorize NDD.

Thesis I: *Get Close-Stay Away* Dialectic: Constructing the Binary

First, my analysis pointed to two simultaneous yet contradictory messages that I observed—get close to nature, and stay away from it. Working from the assumption that youth are increasingly "nature less," rangers, forestry, teachers, and curricula encourage students to get close by bussing them into "nature" places and engaging them in activities. Yet, at the same time, parties caution students to stay away from nature, as

illustrated by the dominant *nature as organized and contained* frame presented in Chapter Four. A number of themes from my analysis fed this thesis, notably how parties promote nature as scientific, named, managed, gendered, a physical place, disciplined, competitive, and focused on sight.

Get close: "It's OK to be a tree lover." Place-based education and curriculum increasingly advocate getting to know nature through physical intimacy. Broad cultural practices send messages to children to get close to nature, and place-based EE has become a widely advocated method to enact this stance (Blanchet-Cohen, 2008; Firth & Winter, 2007; Gruenewald, 2008; Louv, 2005; McKenzie, 2008). As seen in popular rhetorics surrounding NDD, people are encouraging youth to "get back" to the outdoors to personally experience nature (Louv, 2005). Further evidencing the "get back" stance, the *No Child Left Inside Act of 2009* (as discussed in Chapter Two) calls for more place-based EE within a federal overhaul of education. Educational practices have introduced ways to get children into the outdoors, such as school gardens, redesigned playgrounds and outdoor play spaces, and field trips to aquariums, zoos, and other nature destinations. Moreover, *getting close* in this way illustrates larger Western-based discourses that position nature as something with which humans naturally bond.

Existing environmental curricula work to get youth close to nature. The EE curriculum that rangers and educators use on the sites I examined—the American Forest Foundation's "Project Learning Tree" (PLT)—calls for teachers to bring nature into the classroom and students into nature. As PLT (2004a) notes on its Web page, "Young people are spending more and more time plugged into electronics, and less time outdoors learning, playing, and exploring. For over 30 years, Project Learning Tree has been

taking kids outside to learn" (¶ 2). PLT develops and promotes hundreds of hands-on lessons on forestry, ecology, and outdoor exploration, and educators and parents use the materials to get children outdoors. The lessons encourage students to walk in and experience forests; to observe, collect and examine samples; to conduct measurements and experiments; to learn about the interconnectedness of entities; to draw inferences and conclusions; to develop critical thinking and decision making skills; to apply scientific processes; and ultimately to "become responsible, productive, and participatory members of society" (PLT, 2004b, ¶ 2). The lessons are advertised as a way to provide students with opportunities where they can experience, see, feel, smell, and experience nature.

A number of specific themes from my analysis illustrate *get-close* messages, notably within scientific, naming, and management framings; interestingly, these are all highly ordered ways of getting close. First, science-related exercises, such as acquiring, studying, and naming specimens, investigating their measurements and attributes, and deducing inferences are practices that get students close to what they are studying. In the lessons I observed, rangers and educators took students into the forests and did appear to get close in a number of ways. Students watched rangers take core samples from trees and often touched and smelled the samples. Students used nets to catch, touch, identify, and then release water life. Children excitedly dipped their hands in water pulp when making paper and touched and smelled the paper after it was made. Rangers and chaperones took students on trails to collect leaves and cones, identify their names, and tape them to collection books.

My analysis similarly pointed to forestry management practices as a way humans get close to nature. Forest rangers are depicted as the icons of *getting close*—people who

choose a career to work *in* forests on a daily basis. On several occasions, rangers encouraged students to join their profession, using their proximity to nature as an appealing selling point. On the sites, rangers encourage students and visitors to understand forestry's hands-on management tasks, such as looking after trees; regulating tree-growth rates by managing fires through prescribed burning and fire prevention education; and promoting and using techniques such as thinning, clear cutting, seed method, and tree planting. A ranger's daily tasks are filled with contact with nature—being in and traveling throughout the forests, using their hands and senses to ascertain a tree's health, and cutting down trees and processing them on a saw mill when they are ready to be harvested.

Next, as a way to get close, my analysis identified nature as a place to approach—a special material natured place that is separate from the traditional classroom, with trails and spaces that get students into the thick of forests. Trails give students the opportunity to get into the woods and experience being in its presence; I observed students on trails looking around them and reaching out to touch things around them. I observed adults telling children to get close, such as one parent who stopped a child from killing a bug by saying, "We respect nature," and a ranger who told one child, "It's OK to be a tree lover." In sum, youth are increasingly encouraged to get out and get close to the natural world, to become hands-on naturalists, scientists, and investigators. Youth are educated in the long human history of management practices that bring humans in touch with nature, and the NCESF sites provide an immediately accessible and free place to do this.

Stay away: "Tree cookies" and "enemies." While youth are encouraged to become intimate with nature, simultaneous contradictory message warn them to stay

away, evidencing broad dualistic discourses of nature as a radical Other that is separate from humans. Discussing these contradictory messages, Louv (2005) argues, "Parents, educators, other adults, institutions—the culture itself—may say one thing to children about nature's gifts, but so many of our actions and messages—especially the ones we cannot hear ourselves deliver—are different" (p. 14). Social, cultural, and media-based othering messages frame the outdoors with a great deal of apprehension, distance, and fear. Nature as a cautionary entity is evident when many parents express fear in letting children go outside unsupervised and in media messages that over report abducted children, crime, and accidents (Malone, 2007).

Several themes I uncovered in my analysis illustrate messages of staying away, namely the framings of science, difference, discipline, naming, competitiveness, and ocularcentrism. While nature is organized and confined in ways that get humans close, my analysis simultaneously points to warnings to keep a safe distance. Framing in this way creates distance by promoting cognitive and analytical approaches to nature that minimize emotional, spiritual, and alternative connectedness and co-presence.

When used as a sole framing, scientific approaches send a *stay-away* message. As I articulated above, science-based activities promote looking at and touching nature; yet, framing nature as a "specimen" and provider of "scientific evidence" involves objectifying practices that distance students from what they are studying. When students are granted the opportunity to touch, it frequently is done within a context of objectification, filtering, and use.

For example, in the "Tree Rings" lesson, while students can touch and smell core samples that rangers drill from trees, these actions take place within the context of a tree

being cut into and examined through its parts. While rangers tell children that cutting into trees does not hurt them and that trees will naturally produce sap to seal up the holes, cutting into trees does make them more vulnerable to insects and disease; this is precisely why forestry advocates pest management and control as ways to save trees from these "enemy" insects. In the same "Tree Rings" lesson, students handle, count, and admire subsections of trees called "tree cookies." When handling "tree cookies," students do not actually touch the wood; instead, they touch the polyurethane coating that is painted onto the samples to make the rings more visible and easier to count. As these examples illustrate, core samples and "tree cookies" are *pieces* of a tree, *objects* that deemphasize a tree's wholeness—and are further separated by things that are done to them, such as polyurethane coatings—or its interconnectedness with an ecosystem or other entities, including humans.

In another example, in the "Water Wildlife" lesson, students use nets to catch and touch water life. Again, this practice is conducted within a distancing cognitive notion of natural-science analysis, where a water nymph is an interesting entity to catch, observe, biologically identify and classify, and then release. Moreover, when students were catching water life, teachers frequently told them not to get dirty or wet, promoting a disciplinary way of depicting nature as dirty (and dirty as bad) and intervening with potential connection and engagement with nature that comes with dirt and wetness (and can sorely miss the point of the exercise). In "Paper Making" lessons, children can feel the warm, gooey, and oozing properties of tree pulp, but this touching takes place with already *processed* and objectified wood materials and within in the context of commercial paper making. As my analysis began to illustrate, children are sent the clear

message to connect with nature, but only in ways that conceptualize it through contained parts and utilize it for products.

These examples point to the partitioning, containing, and organizing of nature. Partitioning and separation begin with organizing and controlling forests through structures of science, naming, gendering, and difference, and then by building structured and controlled classrooms within the contained forest. By containing and organizing the forests and classroom spaces and implementing systems of discipline and structure, humans similarly are partitioned and controlled. Partitioning and control then allow for trees and forests to be extracted from a holistic ecological view to one that is fragmented (Wilson, 1992). The prominent notion of objectified partitioning is illustrated in "Tree Identification" classes, where students pick leaves from trees, identify, catalogue, compare the leaves, and then tape them into books (See Figure 13). In doing this, a leaf is turned into an analytical and ordered entity, to be understood through science, naming, and discipline.

While students are brought into a natured place, disciplinary methods directly decrease contact and connection while they are in that place and send the message to remain organized, contained, and distant. "Don't run," "pick up your feet," "stay on the trail," "sit down," "walk," "follow me," "leave the animals alone," and "don't panic" are commands that attempt to keep children within the confines of order and control, creating a sense of being in but really contained and away.

Figure 13. The Objectified Partitioning of Nature. In "tree identification" classes, leaves are picked from trees, identified, organized, catalogued, and then taped to books

Next, while forest-management practices allow rangers ways to get close to nature, they are carried out in a manner that enables them to keep a distance. For example, rangers largely use machinery and technology to manage the sites which allow them to keep a distance (Glendinning, 1995). These practices can even enforce and *necessitate* distance; some rangers would rather connect, but the conventionally deemed practices of using machinery emplace detachment. For example, when rangers move through the sites, the predominant means of transportation is on John Deer "gators," trucks, and other transportation devices. Rangers walk through the sites and trails with

the children during the lessons, yet, in the primary site I observed, they travel to the meeting places in gators and trucks, even in distances that take five minutes by foot. Further, when rangers manage nature, they use spray chemicals on weeds, insects, and wasps. Chainsaws and outdoor power equipment cut trees, and saw mills and wood chippers process timber into lumber, wood chips, and sawdust.

I observed that forest management is strenuous physical work—a notion I learned when I hurt my back lifting a plank from a saw mill and spent one week in bed. In this way, physical work is largely masculine and predominantly takes place through tools, machinery, and other implements that reinforce the nature-culture binary, othering, and difference. Machinery and technology have become conventional on many forest sites because forestry has been constructed to be hard masculine work that can harm humans. As recent television shows such as "Ax Men" on the History Channel sensationalize, working with wood and in logging is depicted as dangerous masculine work that can take lives. Machinery becomes a way not only to speed up timber production, but to empower humans by keeping the human masculine body largely safe and efficient. While it can sometimes also hurt the body, machinery and technology largely create safety from the dangers of nature while providing efficiency and, most important, necessitate distance from what is being done to nature (Glendinning, 1995). The largely White male body is wrapped up in and necessitates consuming nature, where it becomes less consumed by forests as it consumes forests more, an imbalance that adds to radical othering.

Essentially, constructing distance through science, naming, difference, and forest-management practices maintains the traditional construction of a dominant dualistic notion of nature as a radical Other. Scientific approaches to nature position nature

through difference (Haraway, 1989; Moore, Kosek, & Pandian, 2003) and stem from Darwinian (1859/2003) assumptions that define and categorize species on the basis of difference and deviation.

Here, connection is promoted through getting close, yet nature is thought of as Other, as different from humans, and as something from which to keep a distance. While a broad othering-connection binary is prevalent in much environmental thinking (Milstein, 2009b), this binary takes on individualized and specific forms in these sites to meet specific needs. Milstein (2009b) expands on the othering-connection dialectic that is central in much Western ideological environmental discourses. For many children on the sites, getting close and staying away is the specific way in which dominant othering-connection is taught.[75]

Ultimately, there are a number of implications to the ways in which *get close-stay away* positions both communication and human-nature relations. Communication practices that are used within concurrently promoting closeness and refrain send the message to get intimate enough to trees and forests to appreciate and want to grow and protect them, but far enough away to eventually be comfortable with cutting them down. Trees are positioned as aesthetically beautiful, interesting to learn about, and necessary to the survival of life on earth. Youth are encouraged to become advocates of trees and understand their central role in nature. Yet, as forest-conservationist ideology dictates and educational systems then affirm, trees ultimately have a purpose for humans and need to

[75] As a side note, there is an interesting parallel between the *get close-stay away* dialectic and relational dialectics that scholars propose in theorizing interpersonal relationships (Baxter, 1988, 1990, 1993). Baxter identifies *autonomy/connection* as one of three dialectics of relationships, where relational partners experience a tension between desiring closeness and needing space. It would be interesting to explore possibly broadening interpersonal theories of this kind by linking them to human-*nature* relationships.

be harvested; trees are renewable resources and central to human, social, and economic development.

There is a delicate balance in this dialectic between closeness and refrain, where leaning too far to one side appears problematic, but often materializes nonetheless. Getting *too close* to a tree may result in becoming a preservationist, deep ecologist, environmental advocate, or "tree hugger"—and directly contradict conservationist forest practices. Remaining *too far* away can result in apathy toward forestry (and nature) in general; if one is too distant and indifferent, it becomes difficult to advocate for forest-management practices and forest-environmental education. Essentially, closeness and separation form a dialectical relationship, where one needs the other to maintain just the right amount of traditional Othering-connection relationships. Milstein (2009b) argues that, while two contradictory notions are prevalent (e.g., othering and connection; get close and stay away), the "poles of these dialectics, however, do not receive equal airtime" (p. 28). While both *get close* and *stay away* poles exist on the sites, the presence of *get close* rhetoric allows people and parties to say they are engaging in closeness. Yet, discourses and practices more prominently land children on the side of *stay away*.

What is produced by getting close and staying away, then, is a communicative and behavioral tug-and-pull motion that simultaneously connects while it deters and creates a split. Two separate and diametrically opposed ways of seeing nature tug and pull students in opposite directions, hoping to land them in a very particular middle and "reasonable" place—forestry conservationism and consumer ways of life. This tug-and-pull motion mirrors larger cultural anthropocentric relationships with nature—the appearance of a co-presence while promoting alienation. This dialectic is found in similar

"natured" places like petting zoos, where animals are accessible by feeding and touching, yet are ultimately caged, staged, and engaged for human use. As I show in the next section, this kind of *get close-stay away* relationship as it materializes in these forests produces larger cultural and political ideologies and practices, namely consumerism.

Thesis II: *Production—Consumption* Context: Consuming Trees and Consumerism

This study points to how forest conservationist EE approaches at these research sites frame messages of producing and consuming nature. I situate this section within extant interdisciplinary literature in commercial appropriations of human-nature relationships. Here, I examine how the framing practices that were outlined in Chapter Five—nature as an entity that is produced for people to use—contribute to the reproduction of the consumption of forests and then how consuming trees can contribute to the production of environmental alienation. While *get close-stay away* illustrates how visitors are encouraged to relate to nature by staying within a traditionally Othering-connection dialectic, this section points to larger cultural implications of this relationship and the kinds of meanings that are produced. I explore here what consumption then eventually produces. Framings of nature allow forests to be consumed as both raw material and as a commercial appropriation. In turn, these modes of consumption (re)produce trees (as raw material) while producing a number of cultural outcomes. Production and consumption are presented predominantly in relationship to one another and not as separate phenomena. In addition to a context, *production-consumption* plays out in an ongoing cycle, where consuming trees then brings them into being, which then subsequently defines the nature of their existence and makes them more available to consume.

In what follows, I first describe how a *production-consumption* context promotes producer-consumer relationships. I trace this notion through a master narrative that I interpreted from the texts that explains what trees are. Second, I point to public-commercial intersections and how they influence human-nature relationships. I end by articulating what producer-consumer relationships themselves can produce.

Promoting producer-consumer relationships. My analysis pointed to how human-nature relationships are promoted within a context of production and consumption; nature is an abundant producer that exists for human use and is central to industry and commerce. To reiterate Price's (1996) assertion, within the context of capitalism and hyper consumerism, "we approach the natural world, just like everything else, instinctively as consumers" (p. 198). Like other objects and ideas in consumer-based cultures, trees can be morphed into a commodity; the more they are molded to ensure uniqueness among other goods, the better they can be sold (Marx, 1986; Rogers, 2006a). Consumerism relies on the presence of objects and ideas that humans can appropriate, possess, exchange, and consume (Marx, 1986). The rangers and the forest service position the talking trees in this way—as a unique "selling point" to catch the public's attention and to sell the value of forestry and conservationism. In addition to literally consuming trees through producing, harvesting, and using materials for products, economic and cultural practices in the forest sites promote the "cultural consumption" of trees (Lutz & Collins, 1993; Pratt, 1992).

To illustrate how producer-consumer relationships especially are promoted, I interpreted the following narrative of how trees are conceptualized as commercially appropriated. The following is the story that forestry, rangers, and curricula tell about

trees (and rocks). This narrative illustrates the *get close-stay away* dialectic, but the central logic ultimately lands in a place that promotes consumption and use—of the trees, of cultural beliefs in consumerism, and of other similar notions.

If trees could talk—as forestry speaks for them—they would communicate the following narrative, beginning in production and ending in consumption. Trees are identified first and foremost as physical entities that exist in nature. Trees look a particular way, have parts, relationships to other life forms, material qualities, and science is *the* objective method to prove these attributes as uncontested fact. Because forests are "homes" to trees and are increasingly threatened, they must be protected. Humans need to get close to trees and forests to appreciate, value, and advocate for their protection.

As the narrative continues, trees eventually become old, and sometimes their growth is not ideal or "normal" (e.g., trees that are "thin," "crooked," "scrawny," "gnarly," or grow too close together). A tree's natural life cycle has an end, and it will eventually die. Nature can end a tree's life through insects, diseases, ice, and storms. Yet, these natural ways of controlling tree growth are presented as unnatural and bad (and even evil through the "enemy" metaphor) because they are unpredictable and "waste" trees. Trees grow and exist in abundance, and they die and are wasted. Humans (specifically rangers and land owners) should overcome this problem by mimicking nature to harvest and fell trees, but do so in more controlled ways. Here, the notion of humans as an ideal regular promotes an ideal way for nature to physically be and appear; those who do not meet the ideal must be culled. Essentially, humans can manage forests better than nature, implying that humans ultimately are superior to nature and thus reifying the traditional nature-culture split.

A similar narrative and logic emerged from Clemmons ESF's forest geology trail—"the home of the talking rocks." I interpreted a five-part sequence of how rocks are depicted in ways that end up normalizing their production and consumption. Essentially, if rocks could talk, this is what they would say. First, like the trees, rock recordings typically greet the visitor with "welcome" and "hello;" imposing human greetings onto the rocks anthropomorphically positions them as friendly, approachable, and sociable individuals. The rocks then typically identify their names, classifications, and what they are a part of, such as "I am a piece of granite, just one part of a large body of rock called a batholith." While it appears this message is promoting an ecologically holistic understanding of rocks by positioning it as a part of a larger system, taxonomically positioning rocks in a structured scientific way. Third, the recordings describe physical characteristics and how they fit into geological and human historical accounts—again, anthropocentric framings.

Next, a dominant theme of "breaking down" into smaller pieces became dominant in the rock recordings—land masses and mountains break down into boulders, rocks, sand, and then into minerals, which trees, animals, and humans ingest and break down. The Gabbro recording illustrates this prevalent "breaking down" theme, where soil, deer, and humans alike need and use rocks:

> Every living thing depends on these minerals directly to survive. Microbes in the soil depend on nutrients in the soil to grow. Trees absorb minerals from the soil to help produce new leaves. People need essential nutrients from minerals to maintain the right balance of liquid in their body. And the stately whitetail deer needs minerals from the soil to help grow his massive antlers every year. Life has

> always depended on minerals. They have made life possible. By using them we are following a long history of living well from our planet's mineral resources.

This quotation points to every living being—from microbes to the stately whitetail deer to humans—as needing nature in some way and similarly benefiting from human management practices. Additionally, the abundance of "breaking down" rhetoric may normalize mining and quarrying practices, where humans actively "break down" rocks, just as nature does.

Finally, as the last sentence in the above quotation illustrates, trees and rocks ultimately exist for people to use and for forestry to manage. Rocks are abundant and they are made and modified by geological and natural forces, notably through change, where nature constantly breaks them down. Humans, animals, and trees need rocks, which provide essential minerals for survival and products. In this last step, consumption is tied to governance, pointing to forestry's role in the profitable production of forests and positioning "public lands as government-regulated spaces of production"(Kosek, 2006, p. 81). Consumer framings position forestry as an essential entity in managing trees and consumption.

These narratives are important for a number of reasons. In sum, the theme in Chapter Five—nature exists for human use, as an abundant producer, and as central to industry—points to forests (and the rocks beneath and beside them) as objects in a producer-consumer relationship. Nature naturally produces an abundance of trees, but not in the quantity that humans need. To assist nature in creating more, humans manage trees to enhance their production. When humans consume trees, they also consume this producer-consumer relationship, implying human superiority over nature, reifying

economic and cultural systems of consumption, promoting commerce, and reinforcing the nature-culture split. Teaching youth this most important producer-consumer relationship was central to forest EE practices on the research sites.

Moreover, how trees are defined and appropriated—within producer-consumer relationships—directly stems from cultural notions of need that largely are obscured in the narratives. Humans are positioned as always naturally needing things from trees—pitch and planks for ship making, arrows for Indians, wagons for settlers, wood for homes, firewood for heating, containers for storage, oils for flavorings and medicines, and colors and shade for aesthetic and recreational use. Yet, *how* and *why* humans need and under what conditions humans consume to fulfill their needs is absent. The main message on the sites involves walking through the forests, viewing, identifying, remembering, but always ultimately ending up in the place of use.

Ultimately, needing products befitting consumer lifestyles is normalized by capitalism and overconsumption. Price (1996) examined how The Nature Company and shopping malls encourage people to think about nature by consuming it in order to preserve it—a similar tenet in forest conservation practices. Price notes,

> The Nature Company markets twelve thousand products that, on the one hand, sustain American middle-class ideas of nature that mitigate the materialism and artifice of modern capitalist society and, on the other hand, sustain, through the creation of artifice, the capitalist overconsumption of resources that underpins American middle-class life. (p. 201)[76]

[76] Some environmental practices attempt to reduce environmental degradation but actually end up subverting it and even promoting consumption. For example, Dauvergne (2008) notes, "Curbside recycling in many cities uses trucks to collect discarded goods and factories to sort and clean them, requiring both money and energy while also producing pollution" (p. 220).

Similar actions are evident in producer-consumer relationships promoted in the NCESF sites, where forestry can be conceptualized as a public entity that markets millions of trees to sustain human overconsumption.

Public-commercial intersectionality. Producer-consumer relationships take place within and are influenced by an intersection between government and commerce. A bleeding between public and private interests allows commercial messages to be inserted into public sites I examined to encourage visitors and children to think about nature in a particular way (Davis, 1996; Milstein, 2009b; Opel, 2003). Some literature within consumer appropriations of nature looks at how commercial sites stylize themselves as public places. For example, Davis (1996) suggests that the corporation that runs Sea World use rhetorics of public education and environmental protection to style the site as a public facility in a way that obscures corporate intentions and profits. Davis (1996) expresses that this "commercial confusion of retail space with public space" (p. 506) is becoming increasingly popular in commercial venues.

Other consumer-appropriation-of-nature literatures look at the effects of corporate sponsorship within *public* sites. For example, Milstein (2009b) illustrates how zoos continually seek corporate sponsorship, which in turn shapes messages within a "sponsor-pleasing paradigm" (p. 40). The effects of corporate sponsorship on governmental sites are evident in the NCESF systems, where commercial ventures that promote the production and consumption of natural materials and products take a similar form.

In the ESF system, one contributing factor to the "erosion of the boundaries between the public and private" (Opel, 2003, p. 36) is a decrease in public funding to support the sites. The forests have been operating under tight budgetary constraints for a

number of years, and budget cuts were a common topic of conversation among rangers. To help alleviate cutbacks, several forests have gained nonprofit status to bring in extra revenues. Creating a nonprofit organization and 501(c)(3) status is a venture undertaken by both the Rendezvous Mountain and Tuttle locations.

Developing nonprofit organizations to help fund the sites allows the forests to legally solicit outside funding. Subsidies invariably come from private endowments and estates (like the Tuttle location) or corporate grants from energy companies, telephone companies, mines, quarries, and corporate home-improvement stores. While these grants provide raw cash to feed operational budgets and provide materials, the money often comes with restrictions on how it can be used and with commitments (and even mandates) to publicly advertise the donation and company. This is how home-improvement corporations come to be advertised on several of the (public) NCESF sites.

The sites that do not have 501C3 status, however, still are wedded to commerce. The constant reiteration of trees as producing things for people positions commerce as a subtle, yet central ideology on the sites. Consumer ways of life are promoted through products like yard sticks, clothespins, toys, chewing gum, drinking glasses, cooking spice, spools, Christmas trees, musical instruments, skis, and baseball bats. Consumer ways of life are written into the site, such as a sign on one site that notes of loblolly pine: "It will take 12 trees this size to build an average 5 bedroom house."

Promoting producer-consumer relationships through public-private intersections has a number of implications. First, trees are produced. Producing forests to consume them leads to—and even necessitates—the production of more trees. The material body of a tree, then, becomes in and of itself a product of consumerism, conceptualized not as

an entity within its own right, nor an entity located within a larger, holistic ecosystem, but an individualized and objectified body that is materially produced to promote consumerism.

Second, disciplinary tactics on these sites that promote producer-consumer relationships perform larger normative functions (Foucault, 1977), positioning the bodies of trees and children within consumer practices. Teachers' acts of discipline within the forests mirror structured educational disciplinary practices that serve larger educational functions of keeping children in line with ordered ways of knowing (through science curricula, for example), and forestry management practices discipline the bodies of trees. Within ordered ways of knowing, a distinct nature-culture binary is reified through a public educational forest system. When the institutions of forestry and education combine forces to promote the ordering, containment, and consumption of trees, in telling the same story, they legitimize one another.

Next, public-commercial intersectionality produces the consumption of consumerism itself. In these sites, government (state forestry) and commerce (private and corporate sponsors) intersect, not only to promote forestry and conservationism and use trees, but to promote consumer appropriations of both the trees and the children. The forests are publicly supported sites that have been fed by commercial and corporate industries and broad consumer ideologies that promote consumption. Narratives in the talking-tree trails note how they were built with the assistance of telephone companies; mining and quarries are weaved throughout rock descriptions in the "Talking-rock trail:"

> The system I'm a part of, the Rolesville batholith, is the largest mass of granite on the east coast. I extend under the forest and can be found under the land from

> Garner to Wake Forest about 15 miles wide and 9 miles deep. Many local quarries mine my granite rock and sell it as crushed stone. That's where the gravel used to build this trail came from. As you walk the forest geology trail, the other rocks will have more to tell you.

As this quotation illustrates, promoting producer-consumer relationships can lead to situations where humans cannot see the forest for the trees; what is missing is a more holistic view of the forests, one that lies outside of consumer contexts. When commercialized notions of forests are promoted in this way, consumerism becomes the central—yet invisible—focus on the sites and obscures other ways of conceptualizing them. Not only is the nature-culture divide produced, consumed, and reproduced, but it is unquestioningly swallowed.

In sum, my analysis illustrated the theme of how forest-conservationist approaches construct and reinforce messages that nature produces trees for humans to use. This theme lead to a thesis that examines the reproduction of the consumption of nature, where, along with raw materials and cultural notions such as protectionism, management, and consumerism, the promotion of producer-consumer relationships produces the physical bodies of even more trees, more ordered children to promote this notion, and government to back it up.

Thesis III: *Interrupted Boundaries*: Complicating the Binary

Three themes from my analysis in Chapter Six illustrate the ways in which rangers, children, and nature itself resist or complicate dominant framings on the sites: a) as expressions of awe and wonder; b) as acts of resistance and autonomy; and c) in adults' recognition of a problem (through stories that often began with "when I was

young"). In what follows, I illustrate how these framings create places where traditional constructions of the human-nature binary are complicated, and point instead to expressive co-presence with nature (Carbaugh, 1996; Milstein, 2008; Rogers, 1998). These interruptions help to further articulate the boundaries—both material and relational—between nature and culture.

Rangers, teachers, curricula, and forestry construct nature and human-nature relationships in ways that point to traditional constructions of nature and influence human-nature relations. Public hearings, publications, and official discourses influence how people come to understand the natural world and environmental topics (Sack, 1986).[77] This notion that people and parties actively frame forests and nature has certainly been central to my project.

Yet, people respond to these framings and develop their own interpretations and co-presence. I approached this project with a combined interpretive and critical perspective not only to orient my topic contextually, but to allow me to understand how larger framings of the nature-human divide are challenged. Incorporating this approach has led me to investigate how meaning is interpreted and reshaped by people and to allow a deeper understanding of how rangers and children negotiate, resist, and complicate framings. As a result, I observed a number of acts that interrupted, resisted, and provided a direct contrast to dominant constructions. These acts were often subtle but sometimes striking, and they typically stood out as exceptions to the organized and structured reality that rangers, forestry, curricula, and teachers presented.

---

[77] For example, government influences how parks (Ali, 2002; Oravec, 1981; Weaver, 1996), monuments and memorials (Foss, 1996; Gallagher, 1995), museums (Zagacki & Gallagher, 2009), and wildlife refuges (Sovacool, 2008) are constructed in ways that influence perceptions and experiences.

The notion of *interruption* came to me in my observations as a way to conceptualize acts that can be interpreted as resistant, notably in how they disrupted the ordered and contained framings of rangers, forestry, and curricula. Teachers and rangers sometimes used the word *interruption* to guide student behavior, such as teachers who told children, "Don't interrupt the ranger while she is speaking." In one specific example, when children "interrupted" a lesson to discuss a bird that flew into the area where the class was being held, the instructor told the children not to interrupt.

Interruption is situated within larger environmental communication conversations, where scholars use the notion of interruption and disruption to discuss similar ideas (Adams, 1990; Cox, 2010; Pezzullo, 2001; Schutten, 2008). For example, using the "Step It Up" initiative and the Sierra Club's "Beyond Coal" campaign as case studies, Cox (2010) illustrates the potential of certain communicative efforts to interrupt and promote change within dominant systems. Cox proposes a heuristic strategic as a way of illustrating how individuals and coalitions use leverage as places to position themselves within systems of power. Cox argues, "The ability to alter the dynamic at relevant sites, therefore, depends upon an *intervention*—the application of a certain force with the potential to redirect the lines of authority or influence which intersect at this site" (p. 131, emphasis in original). I similarly argue that the ability to intervene allows individuals and parties to redirect lines of authority or influence and may rearrange power within wider systems. In my research site, students, rangers, and nature itself interrupted in ways that similarly exposed systems of power and attempted to intervene in them.

In another example, Schutten (2008) situates the term *interruption* in the nature-culture dualism and in a Western ordering and disordering of nature. Schutten analyzes

the documentary film *Grizzly Man* and argues that the film's climax, where the main character who has spent 13 summers living among bears in Alaska is mauled and eaten by a bear, allows humans to move to the nature side of the nature-culture binary and problematize human centeredness and control while suggesting that humans, too, are a part of nature. From a slightly different angle, Pezzullo (2001) discusses the ways in which citizens groups were able to interrupt and reframe an environmental issue using bold acts of environmental justice. When the state of North Carolina planned to construct a toxic-waste landfill in a predominantly black, poor, and rural area, residents interrupted the move by laying on the road, an motion that sparked larger conversations in the state surrounding environmental degradation. Pezzullo identifies these as rhetorical acts with the intent of (and that result in) critical interruption. Pezzullo uses the notion of *interruption* to refer to deliberative acts located within environmental-justice movements designed purposely to jar systems of power.

Essentially, interruption can entail deliberative and decisive political and rhetorical moves (Cox, 2010) such as laying one's body in a road to block construction within an environmental-justice context (Pezzullo, 2001). Intervention similarly can be comprised of moves such as vegetarianism (Adams, 1990) or the unintended move to question the nature-culture binary found in the ending of *Grizzly Man* (Schutten, 2008). The cases of intervention I observed in this study were not necessarily bold political statements, but unintended and independent motions, where students, rangers, and nature spoke and acted in ways that exposed, contradicted, and complicated tightly constrained dualistic orders of nature. Moreover, as the discussion below will illustrate, this study

adds to interruption literature and theorizing by positioning non-human entities in nature as forces capable of interrupting.

In my observations, within acts of resistance and autonomy, I observed children who took it upon themselves to interrupt and bypass dominant framings. For example, in a "tree identification" lesson, as students were writing the names of trees they had collected and taped into a workbook, one student asked the instructor how to spell "loblolly pine." A chaperone saw that another child spelled it incorrectly and told the student to change it. The student looked up at the chaperone, smiled, and said s/he liked it the way it was and wanted to keep it. The student did not change the spelling, and the chaperone turned to help another student. To recall another previously presented example, an instructor asked students to identify a tree by looking at a leaf. When several students incorrectly answered "heart tree," the instructor corrected them and reminded the students to identify it by looking at the stem. One student who answered "heart tree" said, "Well, I call it the heart tree."

Within a structured and rigid site, where nature is constructed in a traditional way, children sometimes pushed the boundaries through their imaginative conversations and interactions, which I perceived as being counter to the logical ways the sites were framed. To recall an interaction I observed in a guided talking-tree tour, where children talked about a frog they saw, after discussing how small frogs are, and after speculating how tadpoles turn into frogs, one child wondered: "They are in the water and they are there for a month or a year or something like that and then they turn into a frog." While this is not necessarily a reframing, this conversation can be conceptualized as a type of interruption. In this case, the children are engaging in imaginative conversations, questioning "how" a

tadpole becomes a frog. A common "answer" to this question would implicate a specific ontogenetic biological process. Yet, here, in the presence of that dominant framing, children are able to wonder about the tadpole without immediately turning to science.

Rangers themselves also challenged traditional framings. In interviews, several rangers expressed their opposition to how the forests are managed and how children are taught. The ranger who was called a "tree hugger" by others because s/he objected to cutting down an old stand of trees told me s/he continued to express the opinion to keep the trees. Another ranger told me that s/he opposed the use of human face carvings on the talking-tree trail at one site, noting that they make the trees seem "too anthropomorphic," "too Disneyland-like," and "represent the wrong idea." Yet another ranger expressed that some material in the lessons was too old and rigid and decreased sensory experiences. In another interview, a ranger adamantly resisted how disciplinarian teachers sometimes are during the lessons; this ranger told of how s/he took it upon his/herself to make the lessons less disciplinary. In addition, the recent trend to build indoor classrooms in the forests for lessons was not something one ranger thought was appropriate.

Last, in one talking trail, I noticed a tree recording that says, "A forester looks after me now—I know I can count on *her* to make the best decision for my future" (emphasis added). When I asked one ranger about this, I was told a story of how, within such rigid gender framings, this exception arose. The ranger told of how one of the male forestry personnel who was involved with writing the talking-tree scripts had a daughter. He wanted to insert "her" into the recording because he believed forestry was too male-based, and he wanted to send his daughter the message that she, too, could be included.

This overt act of challenging deeply entrenched gender forestry ideologies and practices continues years later, as the recording still plays this message.

In addition to humans, and central to my argument, I argue nature itself can be seen as "interrupting" nature-culture boundaries, and I offer several examples to illustrate this notion. One example—that I refer to as "the case of the interrupting bird"—occurred in a "Tree Identification" lesson that took place in an outdoor shelter area. While the instructor was speaking about identifying a tree by its leaves, a bird flew into the shelter, hovered above a nest, and then flew out. A child excitedly pointed to the bird and said, "Look at the bird! And he made a nest!" An older male chaperone said, "Pay attention, this is not bird time," and the instructor, talking over the chaperone, confirmed, "This is not bird time." The chaperone followed with, in a scientific frame, "This is not ornithology time here." One child then responded: "Yeah, but birds live in trees." The instructor said, "That's true," and then redirected the students to the lesson. The chaperone then interrupted the lesson and asked the instructor if any type of pine can be used for construction. Looking rushed, the teacher replied, "Yeah, yeah, yeah," and responded with an answer, noting the types of pine that are ideal for building. The teacher turned to continue speaking to the students, a few of whom began talking in the meantime. The teacher replied to the students, "Shh, everybody, don't interrupt, I want you to listen to what I am saying here. This is kind of an important thing, alright?" The children obliged and turned their attention to the teacher. The bird flew in and out of the shelter a few more times, and several children looked each time.

In this example, the bird functions as a metaphor for a whole range of ways nature can interrupt humans' plans and orders for it. The chaperone's response pointed to how

the bird and the children were out of order—a normal scientific order and framing—in iterating that it wasn't "bird time" and incorporating the term *ornithology*. In this case, children used the bird's actions to conduct their own interruptions. Essentially, the bird interrupted the lesson—and the tightly controlled and contained episteme within it—and the children continued the interruption.

In the process of interruption, I argue that nature can be conceptualized as asserting a level of agency. Foucault (1966/1994) points out that all orders can be reordered and that parties can contest orders by reframing them, trees included. Essentially, because things are ordered, humans have agency (Foucault, 1966/1994), and I argue this applies to the natural world. When nature and people interrupt orders by challenging them, the ordering becomes exposed, and the nature-culture binary becomes uncovered as well. When a bird interrupts a lesson and when children follow the bird's lead, both assert agency in reordering. In the same way, when a tree naturally grows in a "crooked" way, it, too, is defying the "straight trees are best" notion that humans impose onto it (See Figure 14).

Figure 14. Interrupted Boundaries: A “Crooked” Tree Performing Resistance?

I point to the above examples to illustrate interruption and to articulate how these instances challenge human-induced boundaries. The examples illustrate significant acts of resistance, such as the notion that nature should be properly named and identified and students and trees should follow systems of naming without contesting them. For example, suggesting that a tree has another name directly contradicts scientific interpretations and classifications found within forestry. Nature and children are perceived as undisciplined entities, in need of shaping, molding, and correction. Children can counter these framings by committing acts that are perceived as inappropriate and

rude; they pick up leaves and rocks on the trails, feel them in their fingers, and put them in their pockets. If teachers are not looking, sometimes children take them home.

That people interrupt dominant practices exposes three things: a) the nature-human binary itself; b) the positioning of nature within a framework of environmental co-presence (where it "speaks" for itself); and c) how constitutive theories often do not account for interruption. First, people slam together, in subtle and interesting ways, the nature and culture worlds, complicating traditionally dualistic ways of seeing them. These interruptions allow for people to not just see through only one lens.[78]

Second, interruption incorporates nature as "speaking," where interrupting birds and crooked trees mediate communication practices and perceptions. When the bird interrupted the lesson, when the child pointed to the bird, and when the child further contested the teacher's reply that the bird has nothing to do with the lesson, the bird and the child exemplified the kind of mediated interruption that is possible in human-nature relationships.

Interpreting these acts as a kind of mediated interruption similarly positions nature in this research project not as a passive entity, a move much needed in environmental communication research (Cox, 2007; Rogers, 1998). Interruption not only broadens notions of agency and co-presence, but it deemphasizes the objectification of nature that constitutive theories often promote, allowing for "an affirmation that we humans are embodied creatures embedded in a world that is not entirely our own making" (Rogers, 1998, p. 268). Interruption, then, is a practice that happens in the forest

[78] The notion of multiple ways of seeing ties closely to Marafiote and Plec's (2006) notion of heteroglossia in environmental communication.

sites, within human-nature relationships, and in the reconceptualization of social constructionist arguments in environmental communication research.

Rediagnosing Nature-Deficit Disorder

In this section, I tie together the three theses I presented above to return to a theory that I explored in the introduction and that has been woven throughout this project—nature-deficit disorder (NDD). In what follows, I first provide a rationale for returning to NDD and then summarize the hypothesis and point to its merits. Next, I examine the limitations of thinking about environmental education (EE) in this particular way, and I then pose an alternative "diagnosis" that I feel better encapsulates what I observed on my research sites, essentially reexamining and rediagnosing NDD. Turning to ecopsychology, I illustrate how my findings point more to schizophrenic-like relationships with nature. In sum, I rediagnose NDD to illustrate how framing issues in this research site as schizophrenia—notably concerning the issue of a "split mind"—helps lead to different solutions.

I revisit NDD for a number of reasons. First, in my research, educators, rangers, curriculum, and parents cited NDD and advocated its core assumptions, beliefs, and solutions; NDD has become a popular central conversation in forest EE and Project Learning Tree curriculum.[79] Referring to NDD in this way, one ranger said in an interview, "There's a lot of push right now, you know, the 'last kid left in the woods,' about getting more kids out into the environment and exposed." In several other interviews, I was directly encouraged to read *Last Child in the Woods*, and the rangers

[79] I was also recently told by a scholar who researches national parks that NDD has also gained a cult-like following within the park system.

advocated its approach. NDD has become a catch-phrase to encompass and communicate a number of specific beliefs surrounding various kinds of place-based EE.

Second, the assumptions and explanations promoted by NDD normalize a particular set of solutions, with implications for how forest EE at this research site materializes. If children are staying inside and suffering physically and emotionally, where a "deficiency of nature" is the core problem, it makes sense for children to go outside. And, what better way to go into nature than through governmentally supported place-based EE sites that provide the already-built infrastructure to do so? Essentially, the normalized solution is to expand outward, into nature, to address the problem.

Third, advocates and coalitions supporting NDD are gaining ground in their push for federal educational reform for expanded place- and science- based EE curricula, most recently through initiatives such as *No Child Left Inside* legislation. Yet, while advocates share success stories of place-based EE, there is limited literature that critically examines both the widespread assumptions behind NDD, science- and place-based EE as a solution, and *what actually happens* when students visit these kinds of sites. I revisit NDD to illustrate how this project provides a case study to illustrate the implications of solutions offered by NDD advocates. These types of studies are lacking and greatly needed.

Last, I return to NDD to illustrate how its proposed solutions do not address the *get close-stay away* and *production-consumption* issues that I found in the sites I researched. I reposition the *get close-stay away* and *production-consumption* issues instead within a schizophrenic-like framework that contributes to environmental alienation—a notion that *interrupted boundaries* can resist. I argue that the major tenet of

place-based forest education—calling for children to "go back into nature" within a natural-science context—"rhetorically sidesteps" (Wolfe, 2007) the primary issues that have led to environmental estrangement in the first place. Conceptualizing this problem alternatively within a schizophrenia metaphor tackles these issues head on, exposes them differently, provides alternative solutions, and reexamines human-nature relationships.

A Summary of Nature-Deficit Disorder

Louv's (2005) increasingly popular theory of NDD argues that a host of problems arise from youth spending less time in nature. The underlying assumption is that children no longer go into nature or engage in unstructured outdoor play, and Louv nostalgically turns to his generation's childhood to mark the point from where humans have strayed. Decreased outdoor contact—said to be caused by societal and parental fear and protectionism (and fueled by media), shrinking open spaces for play, "the criminalization of natural play" (Louv, 2005, p.29), environmental safeguarding that limits play, and technology—has led to dulled senses, behavioral issues, and decreased emotional and physical well-being.

Louv argues that he incorporates ecopsychology and Wilson's (1984) biophilia argument to use nature to heal children by increasing outdoor experiences. Louv notes that his theory has sparked a national movement; it has even gone international, as Louv contends that countries like the Netherlands are intrigued by the idea. NDD believers advocate governmentally supported place-based education in park and forest settings and use mostly natural science and ecology curricula. Louv and others conceptualize parks and forests as available resources; eager to teach the public and increase visitor turnout,

park and forest services appear happily to oblige. Numerous factions also are using the theory to support a federal overhaul through the *No Child Left Inside Act*.

Merits to Nature-Deficit Disorder

There are a number of merits to Louv's arguments, and the baby should not be thrown out with the bathwater. Louv astutely and compassionately describes a real and important issue in an accessible way—children (and adults) are alienated from their surroundings. Louv highlights pressing issues central to environmental alienation that scholars and activists have highlighted for some time, such as fear and despair (Macy, 1995; Tine, 2000), stunted development from environmental disconnectedness (Kahn & Kellert, 2002; Shepard, 1995), gaze and ocularcentrism (Berger, 1980; Foucault, 1977; Kaplan, 1997), and the implications of technology (Glendinning, 1995). Louv and a host of others have evidenced decreased outdoor play and its implications (Hoffereth & Sandberg, 2001; Malone, 2007). Increasing contact with nature has been shown to positively influence children and adults, providing emotional, psychological, and physiological benefits (Carson, 1965; Kahn & Kellert, 2002; Shepard, 1982). Louv argues that "one of the main benefits of spending time in nature is stress reduction" (2005, p.49), and I found this to be true during my data collection. Going to the forests during my study helped to center me, and I consider myself lucky to have had a dissertation site that I went to for stress reduction.

Additionally, in his call for a renewed conservation ethic, Louv points to the ways in which "many educational institutions and current educational trends are, in fact, part of the problem" (p. 135). Louv believes in the power of both institutions and individuals to bring about change and gives a number of specific and applied ways to enact that change.

Written in a reader-friendly, accessible, and optimistic way, the book is an important call to reconceptualize human-nature relationships and a reminder that people are capable of acting and changing.

Critiquing Nature-Deficit Disorder

While the NDD argument has virtues, critical limitations begin to surface, as this current study illustrates. First, the core issue lies in how Louv discusses decreased contact with nature without examining the deeply seeded cultural, economic, and historical factors that have influenced how nature is conceptualized in the first place. By saying that human influences are not more thoroughly examined does not insinuate that humans are more important than nature; what is missing from Louv's assessment is the extent to which human systems, relations, and interpretations mediate the natural world. As Louv argues, a disconnection with nature certainly can result from physical separation from it. Yet, intrapersonal, interpersonal, and cultural disengagement and fracturing promote disconnection in the first place, leading to decreased contact with nature. Louv's argument takes the form of *weak sustainability,* a term Huckle and Stirling (1996) used to describe environmental movements that preserve the economic and social relations which have caused environmental degradation and alienation in the first place.

While Louv contends he is incorporating ecopsychology, some important tenets of ecopsychology are distinctly absent, namely that psychological practices guide dysfunction and need to be addressed *alongside* a "return to" natural surroundings. Lertzman (2004) notes the persistence of this "return" ideology:

> More often than not, ecopsychology as philosophy and practice has been relegated to workshop culture and often has a "getting-back-to-nature" ethos. Although

> there has been some nominal academic work devoted to ecopsychology, this work has for the most part lacked a critical theoretical dimension. (p. 396)

Louv and others similarly skip digging into the underlying roots of dysfunctional relations and head straight for the woods, walking over the problem and alternative solutions along the way.

Next, Louv's argument is decidedly gender, race, and class-based, with a nostalgic desire to return to a "normal" childhood that obscures environmental degradation. Louv uses his own youth—a white middle-to-upper-class 1950s way of living—as *the* ideal way to be. This is problematic for a number of reasons. Using the term *environmental generational amnesia,* Kahn (2002) identifies the tendency to normalize one's own childhood environmental experiences:

> People take the natural environment they encounter during childhood as the norm against which they measure environmental degradation later in their life. With each ensuing generation, the amount of environmental degradation increases, but each generation takes that degraded condition as the non-degraded condition, as the normal experience. (p. 113)

Louv positions his experience—and those of predominately White middle-class suburbanites—by beginning his book by focusing on the 20% of U.S. Americans who live in homes governed by homeowners' associations and organizations, and the way these groups can limit free play. It becomes apparent that a middle-to-upper-class White audience is Louv's central focus and concern.

To which nature humans need to return is similarly gendered, raced, and class-based. The book contains a plethora of nostalgic pining for wandering and exploring the

woods, building tree houses and forts (with the aid of Daniel Beard's 1915 book *Shelters, Shacks, and Shanties*), fishing, collecting and cataloging nature objects (such as leaves and rocks), and journaling. Louv idealizes and quotes frequently from John Muir, Aldo Leopold, Rachel Carson, Theodore Roosevelt, Charles Darwin, the poet John Milton, Davy Crockett, Henry David Thoreau, Lao-Tzu, Naturalist Robert Michael Pyle, William Wordsworth, Vincent van Gogh, Wendell Berry, D. H. Lawrence, and Woody Guthrie. While these people are frequently admired for their environmental advocacy, with the exception of Rachel Carson, Luther Standing Bear, and Lao-Tzu, they provide predominately White male Western perspectives.

To overcome environmental estrangement, Louv prescribes nature walks, hiking, camping, getting away, cloud spotting, playing nature games, gardening, wildlife photography, adopting a tree, building an igloo, digging a backyard pond, nature journaling, becoming "citizen scientists," bird watching, fishing, trekking, collecting rocks, and learning flora and fauna. Louv advocates supporting scouting programs and organizations which "deserve praise for maintaining any link to nature" (p. 154). Trips to gardens, zoos, and natural history and children's museums also are deemed beneficial.

Yet, these activities pose geographical and financial challenges for many. Getting outside and spending time in nature takes transportation, time, money, and a particular kind of lifestyle. Scouting organizations require fees and time, and building birdbaths, ponds, and gardens take property and space. Louv talks about the "pressures parents endure" but does not fully explore the pressures of low-income households. It is more difficult for a single parent, living in a geographically (and often racially) segregated community and working multiple jobs to take his/her child to a "nature area" to fish for

the day, start a garden, read outside in nature, or buy camping equipment. These kinds of activities also require an element of physical and social access; even if one does have the money, time, and transportation to go to natured areas, people of color, women, and youth may not have the same kind of safety in their access (Evans, 2002).

Notably missing from Louv's account are ecofeminists, deep ecologists, ecojustice promoters, Native American advocacy groups, and others who work tirelessly to expose the intersection between environmental degradation, racism, sexism, and classism. Missing is an examination of the link between the commodification, misuse, and degradation of the environment as related to the exploitation of women and political and social movements that combine environmentalism and gender (Cudworth, 2005). Absent is a discussion of how minorities typically live in areas with higher amounts of air, water, and soil pollution, hazardous waste treatment and disposal facilities, experience an increase in pesticide and chemical exposure, limited access to affordable produce, and are more apt to be spatially isolated (Bullard, 2001; Carey, 1977; Dixon, Foster, Durrheim, & Wilbraham, 1994; Pezzullo, 2003; Westra & Lawson, 2001). People of color are also often omitted from decision making processes revolving environmental issues, often even within their own communities; people of color are similarly absent from Louv's book.[80]

NDD attempts to incorporate "other" perspectives—and I suppose Louv would argue that he achieves this goal—but does so in otherizing and limiting ways that do not

[80] Also interesting to note is how Louv (2005) makes a broader argument of the importance that a return to nature plays for nation building: "America's genius has been nurtured by nature—by space, both physical and mental. What happens to the nation's intrinsic creativity, and therefore the health of our economy, when future generations are so restricted that they no longer have room to stretch" (p. 96)? This "space need" argument is interesting in that it resembles early manifest destiny and Westward expansion morals, which were central to American exceptionalism.

include varying perspectives in explaining "why Johnnie and Jeannie don't play outside anymore" (p. 113). One example can be seen in Louv's discussion of the "boyz of the woods"—a group of mostly Hispanic men in the Urban Corps. Louv goes so far as to note how one teen, when hearing a story of a wood-rat, "shudders so hard that his pants, fashionably belted far to the south of his hips, try to head farther south" (p. 56). When non-white groups are brought up in the book, it is often in the disciplining context of how they are conforming (or should) to NDD's way of being in nature.

Next, Louv and others make a problematic plea to return to science. Louv contends, "We see the death of natural history as the more hands-on disciplines, such as zoology, give way to more theoretically and remunerative microbiology and genetic engineering" (2005, p. 3). Advocates call for using nature as a lab experiment and returning to the act of naming and identifying, such as when Louv cites the biologist Elaine Brooks in saying, "humans seldom value what they cannot name," or, as Louv argues, "What we can't name can hurt us" (p. 143).[81] Due to technology, fear, and "well-meaning (and usually necessary) environmental regulations" (Louv, 2005, p. 31), humans have become detached from nature, and reconnection happens by a return to the outdoors through science, as Louv did when he was young.

Based on these critiques of NDD and as illustrated by my analysis, I argue that scientific approaches (the context advocated as the means for reconnection within the NDD movement) are part of what landed humans in environmental predicaments in the first place. What is missing in NDD and in my dissertation site is an examination of what

[81] As previously discussed, naming is central to scientific framings and becomes a way of knowing nature. Louv argues the importance of naming when he asserts, "What if, instead of sailing to the Galapagos Islands and getting his hands dirty and his feet wet, Charles Darwin had spent his days cooped up in some office cubicle staring at a computer screen? What if a tree fell in the forest and no one knew its biological name? Did it exist" (p. 140)?

modern environmental dualistic discourses and the economic and cultural systems that underlie tenets like natural science and consumption *do* and how, in the absence of multiple ways of seeing, science and other lenses encourage humans to perceive nature. Institutional science discourses are not neutral and objective ways of seeing (Haraway, 1989, 2007); they form cultural assumptions and call for particular practices, namely in how they perceive entities in nature as objects separate from other objects (and ultimately separate from humans). Louv's solution becomes a way back into this trap, through a nostalgic pining for the losses of an idealized childhood and natural science, a notion evident in Louv's solution:

> Revive old traditions. Collect lightning bugs at dusk, release them at dawn. Make a leaf collection, Keep a terrarium or aquarium. Go crawdadding—tie a piece of liver or bacon to a string, drop it into a creek or pond, wait until a crawdad tugs. (p. 360)

To further the medical-diagnosis metaphor that NDD uses, Louv is describing the symptoms without examining the underlying pathology. The argument does not consider that the "real" nature Louv evokes (that, despite ecology and ecopsychology rhetoric, is separated from humans) is *a particular anthropocentric human construction*, driven by and entrenched in dualistic institutional discourses and environmental narratives, notably those surrounding science and consumerism. The assumption holds that nature—and a child's relationship with it—was at one point real, pristine, and functional, and that only within the past two generations has it "changed radically" (Louv, 2005, p.1). As I show in the next section, my analysis found something very different.

A Rediagnosis: Schizophrenic-like Human-Nature Relations

About half way through my data collection—and before I thought of rediagnosing NDD in this project—the word *schizophrenic* kept entering my mind and even made its way into my fieldnotes as a way to describe interpretation of my observations.[82] I was able to theorize this tug and pull through a *get close-stay away* dialectic. When I began researching schizophrenia, however, the symptoms and underlying pathologies began to eerily resemble what I was observing and interpreting on the research sites (and fit better than what NDD describes). I began to note the notion of *getting close* (emotionally going toward nature) and *staying away* (logically keeping a distance) fits the fundamental definition of schizophrenia.

Based on this project, I make the move, then, to problematize and rediagnose NDD. Instead of NDD, I argue that a schizophrenic relationship exists among humans and nature. While I point to schizophrenia as it is described in the Diagnostic and Statistical Manual of Mental Disorders (DSM IV)—the American Psychiatric Association's handbook that determines what is abnormal—like Louv, I do not use it here as a psychiatric diagnosis. Instead, I evoke it as a metaphor to illustrate an alternative

[82] I also see the notion of schizophrenia in other ways. For example, while watching a documentary by Kenneth Burns, *The National Parks: America's Best Idea*, it occurred to me that John Muir—a pillar in the creation of U.S. National Parks and the first president of the Sierra Club—personifies one struggle that I argue is at the core of modern environmental dilemmas. Muir was an avid naturalist with an undoubtedly deep personal connection to nature; his writings helped evoke a "sublime response" (Oravec, 1981) and promoted people to advocate for public parks. At the same time, Muir owned a private estate and commercial farm in California that earned him considerable wealth (versus subsistence farming, where farmers only grow what they need or versus keeping the ecosystem intact). At the same time that he ran a commercial farm and made a fortune, he advocated the non commercialization and preservation of natural areas. As he used water to grow orchards to make a profit, he argued against the damming of Hetch Hetchy Valley in Yosemite, which was promoted as a way to provide water and electricity to California, including for commercial farming. I do not think John Muir is alone in this schizophrenic practice; this tendency similarly exits with many people, including myself. For example, even among environmental scholars, a primary goal is to examine and theorize environmental issues, but not necessarily perform and enact those ideologies through individual practices. Macy (1995) explains this well: "It is hard to function in our society without reinforcing the very conditions we decry, and the sense of guilt that ensues makes those conditions—and our outrage over them—harder to face" (p. 246).

diagnosis from what Louv and others offer. Lakoff and Johnson (1980) argue that metaphors cannot be devoid of their connotation, and in a culture that is profoundly afraid of mental illness, I use the schizophrenia metaphor with caution. Like Deleuze and Guattari (1983, 1987) and Jameson (1991), however, evoking a schizophrenia metaphor positions the conversation differently, notably in the way the metaphor moves to more thoroughly incorporate emotions (such as fear and sadness) back into environmental issues in an alternative way.

Human-nature relationships are marked by schizophrenic-like symptoms—hallucinations, delusions, paranoia, scattered speech and thinking, and social dysfunction. According to the DSM-IV, schizophrenia is a psychiatric disorder marked by aberrations in the perception and expression of reality—notably a difficulty in discerning between real and unreal experiences that lead to "abnormal" interpretations of reality. The word itself means "split mind" and points to an interrupted balance of emotions and thinking.[83] Schizophrenia is marked by a difficulty in thinking logically, having normal emotional responses, and behaving appropriately in social situations. It develops slowly with a typical onset in the late teens to early to mid-twenties. Typical symptoms include auditory hallucinations, paranoid or strange delusions, disorganized speech and thinking, and social or occupational dysfunctions.[84] Treatment typically includes medication, therapy, and sometimes hospitalization.

---

[83] Schizophrenia does not refer to split personality or multiple personality disorder, as some think.

[84] Other psychotic symptoms include showing no emotions, bizarre motor behavior with decreased reaction to the environment, false beliefs or thoughts, thoughts that jump between unrelated topics, agitation, decreased sensitivity to pain, inability to take care of personal needs, negative feelings, motor disturbances, rigid muscles, stupor, anger, anxiety, argumentativeness, delusions of persecution or grandeur, child-like or regressive behavior, inappropriate laughter, incoherence, and repetitive behaviors.

Before I move to the specifics in this rediagnosis, it is important to first turn to the field of ecopsychology, where scholars and practitioners have similarly evoked mental health diagnostic metaphors to identify "the irrational forces that tie people to their bad environmental habits" (Roszak, Gomes, & Kanner, 1995, p. xvi).[85] One of the first to synthesize research in ecopsychology, Roszak (1992) argues that human maltreatment of nature is pathological and needs psychological examination and treatment. Shepard (1982) identifies environmental degradation as a human psychopathology and positions it within a metaphor of "madness," even using "schizo" in his explanation. In an ecopsychology context, Glendinning (1995) proposes "technological addiction," marked by denial, dishonesty, control, grandiosity, and disconnection from feelings. LaChapelle (1992) similarly evokes an addiction metaphor, while Berry (1999) calls human-nature relationship "autistic." Velikovsky (1981) and Devereux, Steele, and Kubrin (1989) frame nature-human relationships within "amnesia" metaphors; Devereux, Steele, and Kubrin propose "collective amnesia" to describe how humans have forgotten practices once central to healthy relationships with nature. Last, Kanner and Gomes (1995) use "narcissism" to psychologically frame human dependence on consumerism.

While not specifically evoking schizophrenia, others discuss the tendency in some cultures to disassociate or "split" one's environmental anxiety from everyday experiences, a symptom of dichotomous thinking. For example, Lertzman (2004) notes, "At the heart of this inquiry is human perception and the ability to 'split off' our concern

---

[85] Lertzman (2004) gives a comprehensive summary of the field: "Ecopsychology cannot be pinned down as any one 'thing'—it is a critical intervention in the mainstream practice of psychology, an assertion of the emotional and affective dimensions of environmental degradation, a reading of human destruction of nature through the lens of 'pathology,' an attempt to understand how humans relate and engage with the natural environment, and finally, an attempt to reconnect with the natural world" (p. 397).

for nature from our ordinary experience of reality" (p. 399). In a discussion of the anxiety created by nuclear proliferation and threat, Segal (2003), whose early clinical research examined schizophrenia, hints at this dissociative split: "Against that primitive fear defenses of a schizophrenic type are mobilized, including increased projective identification, splitting and deadly self-idealization, paranoia, confusion, etc." (p. 259). In their discussion of a "double life," Macy and Brown (1998) similarly argue, "While on the surface we focus on business as usual, underneath there is a vague awareness of impending doom. As with any form of dishonesty, this creates an internal split, engendering self-doubt and leading us to distrust our inner knowing" (p. 34-35). Metzner (1995) additionally discusses the notion of a "dissociative splitting," contending that,

> Western industrial society is dissociated from its ecological substratum. It is not that our knowledge and understanding of the Earth's complex and delicate web of interdependence is vaguely and inchoately lodged in some forgotten basement of our psyche. We have the knowledge of our impact. (p. 64)

Here, Metzner highlights a split between the (industrial and modern) human and Earth, between knowing about environmental degradation while also dissociating.

Several writers in ecopsychology have begun to identify nature-human relationships as schizophrenic, and they contribute to this study as well.[86] Some scholars claim schizophrenia itself is a by-product from a deep separation with nature. For example, Levin (1987) links schizophrenia to modern dualistic thinking by arguing

[86] Moreover, scholars and writers in other fields have also evoked the schizophrenia metaphor. For example, Deleuze and Guattari (1983, 1987) and Jameson (1991) have famously used schizophrenia as a metaphor to talk about issues of consumption, postmodernism, and late capitalism.

schizophrenia is an extreme manifestation of the pain caused by dualism.[87] Others evoke the schizophrenia metaphorically to compare it to human-nature relationships, as is my goal here. Tine (2000) for example, briefly draws a parallel between schizophrenia and human-nature relationships:

> Contemporary humans appear to be suffering under a persistent delusion that their impact on the Earth's life support system is benign and that they are not part of nature. This bizarre delusion of separation from nature has led to a severely dysfunctional relationship with the "more than human world" of which we are clearly and unambiguously enmeshed. Severe perceptual distortion (hallucination) of separateness from the other living creatures of Earth and our absolute failure in reality checking have led to a highly distorted and delusional view of the human relationship to the rest of nature. (¶ 4)

Along with my analysis, collectively, then, these assertions begin to illustrate schizophrenic human-nature relationships, and not a disorder caused by a lack of nature. My analysis illustrates that the distortion is constituted and produced foremost within human perceptions of nature, influenced by deep historical and cultural practices. NDD's assumption is that something has changed; instead, I argue that, while the material manifestations of environmental issues continue to materially morph, the underlying pathologies that have been accumulated for generations have not changed. While this study is focused on contemporary forest EE in the United States, present relationships

[87] Additionally, several Danish, Swedish, and Dutch studies have linked urban life as a risk factor in developing schizophrenia (Minkel, 2009). Moreover, Harold Searles, a practitioner and researcher of psychiatric medicine, specialized in psychoanalytic treatments of schizophrenia. Searles stepped outside of formal psychotherapeutic training to engage with psychotic people in an inclusive way that tolerated and shared the behaviors characteristic of schizophrenia, using spontaneity, quietness, and empathy (Gonella, 2005).

with nature on these sites are situated within a progression of a particular kind of relating to nature (Shepard, 1982), guided by Western dualistic thinking and binaries (Milstein, 2009b), and produced and supported by governance (Kosek, 2006), science (Haraway, 1989, 2007; Kinsella, 1999), and economic structures (Escobar, 1996). In this context, human relationships with nature are more likely to align with dualistic distortedness, positioning the distortedness as "normal."

My critiques of NDD and my attempt to rediagnose are relevant to this study in a number of ways. The forests where I collected data—which rangers and teachers argue are places that directly address NDD—pointed to largely conventional and dominant ways of framing nature. While analyzing the data, I was constantly struck by how the framings of nature did not deviate from exceptionally traditional framings; my interpretations of the constructions were so traditional that I initially worried I was not finding anything "new." I found that nature is organized and contained in scientific, managed, gendered, and disciplinary ways, with a focus on competitiveness, naming, and ocularcentrism. The sites are physical places students quickly go to and through, rushing from the bus to the trails to clearings, sitting for long periods in structured classes, engaging in activities that teach forest management and the competitiveness of nature, while learning the different scientific names and categories of things. Students are told to appreciate, but mostly not touch, taste, talk about, or experience nature, and if they are, it is in typically constrained ways. Students learn that nature exists in abundance and for them to use; forest management speeds up natural processes to quicken consumption. After the structured classes, students eat lunch in a shelter, away from but within the forest. They may be given an additional activity by a teacher, to reiterate what they

learned that day, but the activities typically use similar traditional pedagogical ways of learning. Rangers and students can interrupt this process along the way, seeking and negotiating different ways to experience the sites. Then the children go home—back to the non-forest and non-nature world they know. It is hard to believe these kinds of practices are what Louv has in mind when he advocates Project Learning Tree curriculum, parks and forests, and place-based EE as a way to address NDD.

I now attempt to relate schizophrenia symptoms to my research site—and similar patterns in broad environmental thinking—and how they differ from and challenge a NDD diagnosis. First, a core schizophrenia symptom is the inability to think logically and have normal emotional responses. In this way, modern hyper-consumer lifestyles do not make sense; natural resources simply cannot support human consumption and lifestyle patterns. This fact becomes obscured and sidestepped by many "green" and "sustainability" practices, which argue that humans just need to consume differently.

At the same time, many humans are shut off emotionally, with the inability to have "normal" emotional responses that befit environmental degradation. On my research sites, children who responded emotionally, such as expressing sadness or concern over drilling into a tree or at clear cutting, were quickly put back on a logical path. A forestry personnel told me in one interview that the biggest "problem" people have in environmental issues is "basing it on their emotions, not logic." Another ranger in an interview told me that forest EE is unique in "getting back to utilization" and not preservation or ecology, a move necessary to "tie them [children] back into reality."

This problem can stem from "the dominant Western white-male culture [that] has erected a dichotomy between reason and emotion" (Macy, 1995, p. 248). Over relying on

systems of reason and logic position feelings associated with environmental despair as "unreasonable," as sheer "madness" (Shepard, 1982). Macy and Brown (1998) additionally note that a fear of appearing weak and emotional is a psychological source of repression, where emotion has been divorced from reason. This creates the inability to turn inward and feel the same fear, anger, and sorrow toward the "death of nature" (or drilling into a tree) that humans feel at the death of a loved one or a pet. Macy (1995) also points to the "fear of appearing morbid" or pessimistic, where in the context of a U.S. American "can do" optimism, "feelings of anguish and despair for our world can appear to be a failure to maintain stamina or even competence" (p. 245). It becomes difficult to express despair for problems that appear to have no solution (Macy, 1995).

My thesis of *get close-stay away* captures this split and the inability to have normal emotional responses and think logically. The goal is to keep a "neutral" (logical, not emotional) response to trees, to advocate the notion that humans grow trees but then understand why humans cut them down. Of course, humans growing trees is questionable in itself. The trees are growing on their own and humans aid and control that growth through management practices. Yet, the split between humans and nature—that humans are apart from and "grow" trees—and between logic and emotion are not captured in NDD. NDD argues children do not get enough nature and sidesteps the fundamental nature-human split. NDD does not make humans responsible, does not allow nature to "speak," and does not capture the essence of the problem. Instead, NDD reproduces the binary, moving back to the realm of reason through scientific framings. In contrast, schizophrenia repositions the problem first and foremost *within and of* the human-nature split.

Second, the schizophrenic symptom of auditory hallucinations is highly relevant and intriguing here, and it relates to the research sites, this rediagnosis, and conversations within environmental communication. In the talking trails, humans have used technology to create voices that are supposed to come from trees (and rocks and mules), forming a kind of auditory hallucination where humans literally hear entities in nature talking in ways that they do not and cannot. In this way, it becomes difficult to "listen" to nature (Carbaugh, 1999) outside of these human constructions. I literally experienced this when the volume in some of the talking trails was set so high that I flinched from the loudness; "listening" to what trees might be saying in this context was extremely difficult.

Combining a schizophrenia diagnosis with discussions of mediation within environmental communication (Carbaugh, 2007; Cox, 2007; Milstein, 2008; Rogers, 1998), in the talking trails, humans have framed trees and speak for them in ways that evoke particular meanings that favor humans. In addition to auditory hallucinations, another symptom of schizophrenia—disorganized speech and thinking—is evident in the content of the talking messages. The tendency to organize, name, categorize, discipline, and manage what is inherently unordered, and presenting these messages through talking trees makes it difficult for trees to be conceptualized within the notion of environmental co-presence. Trees and forests are not framed as co-participants here; they are muted and spoken for, in decidedly human ways that have effects on the tree itself.[88]

Third, parallels to schizophrenic symptoms of delusions and paranoia can be made. Perhaps humans on these sites are deluded about power and agency, believing that

[88] As an examination of how human communication mediates nature, mediation is one way to examine "core cultural environmental narratives that find human-nature or culture-nature binaries as ideological organizing factors" (Milstein, 2009a, p. 347). Because an interrogation of binaries became an integral part of this project, mediation is further situated as an appropriate lens through which to view this rediagnosis.

humans really are in complete control of how trees grow. It may be delusional to think that promoting solutions that rely on the same dualistic thinking (going back into nature to cure NDD) is the way to get ourselves out of this mess. Perhaps humans are also paranoid about not having power and control; this notion, I believe, may describe the over disciplinary and overbearing behavior of teachers—a way to exert power and control over children.[89]

Last, these issues ultimately lead to a significant social and occupational dysfunction. In this way, hyper-consumerism is a grossly dysfunctional way of relating to nature and people that obscures environmental degradation. On the sites I observed, people talk about what trees can give us and how we can use them, obscuring other perceptions. Here, economic and cultural systems create social dysfunction, where, as Metzner (1995) notes, "individuals feel unable to respond to the natural world appropriately, because the political, economic, and educational institutions in which we are involved all have this dissociation built into them" (p. 65). In this way, dysfunctionally relating to nature and fellow humans through consumerism is normalized as functional. Social dysfunction takes the shape of shutting oneself off from the natural world and, in the process, also from fellow humans, even in a "nature" site that NDD promotes.

In sum, on the sites, humans hear voices—human voices and made-up voices like talking trees—that fill every minute of the lessons, talking and preaching about what nature is and how to order, identify, manage, and use it. In a comparison between her

[89] For example, the notion of paranoia is especially apparent on the Jordan Lake ESF site. After a devastating hurricane hit the area in the 1930s, the U.S. Army Corps of Engineers built a damn for flood control. The Jordan Dam was made—and the Jordan Lake ESF site itself exists—because humans were not in control and could not control nature and flooding.

own Okanagan meanings of nature versus Western meanings, Armstrong (1995) offers the Okanagan word for *insane* that translates as, "in a state of talking talking *[sic]* inside the head" (p. 319). These voices allow humans not to hear other voices of nature and humans, where recordings, machinery, and nearby traffic drown out other sounds. On the sites, students and adults are hearing human hallucinations and not listening to nature. In this way, nature does not really get to "talk" to us in ways that are able to be heard.

Moreover, humans become delusional in thinking they are the ones in control of nature—creating talking trees, making trails, managing forests, controlling how trees grow (or logically explaining why they may not grow straight), and teaching youth how the process works. Yet, ultimately, humans are not in control, and nature can always find ways to interrupt, including birds who fly where they are not supposed to be, crooked growing trees, poetic dragonflies, uncooperative ponds that do not properly drain, flooding and lightening that make the talking trails malfunction, children who question, and confused and worried adults who cannot help but express that something is awry.

A schizophrenia diagnosis implores NDD and some factions within EE to (re)recognize the traditional nature-culture binary that silently lies at the heart of the issue. Rediagnosis shifts the underlying assumption of the problem from children's behaviors to adults' psyches and cultural practices; instead of sending children's bodies outside (NDD), adults are asked to turn inside, into one's psyche and cultural practices, to address the split. Rediagnosing shifts the causes from technology, shrinking spaces, fear, and overprotective homeowner's associations, to over rationalization, the exclusion of emotion, the perception that nature and humans are separate, and the limitations of knowing nature predominately through science. The symptoms shift from an alienation

from nature to larger issues of psychological estrangement. Obesity, ADHD, depression, and behavioral difficulties are still symptoms, yet so are auditory hallucinations, paranoia, delusions, and social dysfunction. (See Appendix B for summary chart comparing NDD and schizophrenia diagnoses).

Diagnosing practices in this research site—and broad environmental issues—not only helps reconceptualize the problem but offers alternative solutions. In an outward movement, NDD goes outside for the cure, advocating to "open the fourth frontier" by creating more naturally landscaped public parks and play areas (Louv, 2005). Schizophrenia calls on adults to go inside first (psychologically and culturally, in an inward movement) and then seek healing from nature. NDD advocates being out and active in and through "natured" places; schizophrenia advocates being inward and reflective in the inner unknown spaces, perceiving the psyche and assumed cultural practices as frontiers of their own. When it is time to go out into natured spaces, it is with a reflexive spirit of co-presence, where one is in and of a place and not a master over it. Both NDD and schizophrenia, however, advocate the belief in the power of individuals and institutions (such as educational reform) to enact change.

Consuming the human-nature binary. Incorporating mediation in environmental communication—and recalling the "when I was young" stories that can bring together adults from vastly different positions—while humans are responsible for constructing binaries, humans also can mediate varying solutions with one another, using nature as a guide. When conceptualizing nature and the role of humans in it, there are multiple ways that humans conceptualize human-nature relationships. I have conceptualized schizophrenia here as a problem—as an inward way that nature and

humans are fractured in two. Yet, schizophrenia is also another way of being—a method of exposing a "center that cannot hold" (Saks, 2007). In my research sites, human-nature relationships are produced, reproduced, and consumed in potentially alienating ways. However, encompassing and understanding both forms of the argument (NDD and schizophrenia alike and the outward and inward/outward tendencies they both reify) allows transcendence and co-presence. In other words, conceptualizing and appreciating different ways of being in nature—NDD and schizophrenia alike—slam the two together in a way that begins to consume the binary.

To illustrate the notion of consuming the nature-culture binary, as previously mentioned, the researcher and practitioner Harold Searles stepped outside of formal medical treatments to engage with schizophrenic people in an inclusive way that tolerated and shared the behaviors characteristic of schizophrenia, using spontaneity, quietness, and empathy (Gonella, 2005). In addition to exposing and critiquing how nature and co-presence are silenced in these sites, like Searles, mediation helps reconceptualize how to respond to various issues by simultaneously incorporating different ways of being. In a memoir of her own struggles with schizophrenia, Saks (2007) argues that schizophrenics are no different than others and should not be thought of differently. While co-existence with nature largely is absent but sorely necessary in these sites, in listening to nature, humans can learn to listen to and develop co-presence with one another. As I illustrate in the next section, alternative ways of being in environmental education contexts attempt to stray away from contained framings. As my analysis showed, however, within the tightly manicured sites, people and nature can still resist and interrupt. While it is easy to judge and implicate the organized and confined ways the NCESF sites frame nature, mediation

acknowledges it as one way of being, which people are still able to resist, reframe, and complicate.

Alternative Directions for Practice

In this section, I provide a number of alternative directions for researchers, practitioners, and authors who examine EE practices. Before proceeding, I make the move to "recommend" with notable caution. Offering suggestions can be potentially problematic in positioning me within a "researcher knows best" syndrome, and that is not my intention here. I conceptualize this section not from the position that "rangers should do this because I know better." I raise this topic here because of the difference in opinion within critical scholarship as to a researcher's role. Some scholars are concerned with offering recommendations, especially as extensively as I offer them here. Instead, in keeping with the tradition within the genera of both critical research and environmental communication that advocates for social change (Cox, 2007), I offer this section as a data- and analysis-driven conversation to brainstorm the potential ways in which EE can alter their practices to promote social and environmental change. Cox (2007) argues that environmental communication scholars "have a responsibility through our work to identify and recommend practices …to enhance the ability of society to respond appropriately to environmental signals relevant to the well-being of both human civilization and natural biological systems" (p. 16). The ideas I offer in this section align with Cox's notion of social change and researcher responsibility. Moreover, the following discussion is comprised of things that can begin a process of addressing the human-nature binary, and I use my research site as an example throughout.

I begin by briefly addressing the role of forestry and how it may be questioned and reworked to promote different kinds of human-nature relationships. I then offer specific suggestions to educators to adjust their lessons in ways that can lead them out of human-nature dualistic thinking and the *get close-stay away* and *production-consumption* predicaments. I turn to a number of texts and people to help reshape practices on the sites, including people in environmental communication, ecopsychology, and practitioners.

Reconceptualizing Forestry and Forest Environmental Education

First, the role of forestry and forest EE is important to discuss, specifically whether or not it is possible to organizationally and ideologically change broad-based forest and EE practices in the United States (and elsewhere). Examinations of how forestry as an institution can handle itself differently are interesting to consider. Instead of an entity that scientifically frames nature for people, promotes consumer appropriations of forests, and works within traditional pedagogy to teach children, can forestry be something else?

This question poses a central quandary. One major way to tackle environmental degradation is to directly address the cultural ideologies that underlie consumerism and hyper consumption. Reducing consumptive ways of thinking and living is essential to addressing damaging environmental practices (Durning, 1995; Kanner & Gomes, 1995). As Durning (1995) argues:

> The future of life on Earth depends on whether the richest fifth of the world's people, having fully met their material needs, can turn to nonmaterial sources of fulfillment; whether those who have defined the tangible goals of world

> development can now craft a new way of life at once simpler and more satisfying. (p. 76)

If a major solution to environmental woes is to decrease the neuroses and habits that justify consumerism, what can be done with the fact that forestry was developed under the basic tenet that trees are crops that humans consume? As one ranger told me in an interview, "growing a tree is just like growing a crop;" Another ranger indicated that, "Forests were created to make sure we have products." The Department of Agriculture manages forests like any other crop so that U.S. Americans can have enough trees to meet their current and future consumption needs.

A radical shift in forestry ideology and practices, then—an example of an inward reflexive move that schizophrenia offers—might move from conceptualizing forests as managed for consumption to the forest service as the institution that can promote a radically different view of nature. Perhaps it is possible for forestry and forest EE to take the lead and turn consumption on its head. There are numerous kinds of popular EE initiatives—too many to count. While they differ in some ways, most do not leave the confines of the nature-culture binary, for that divide is often too vast to be realized. While parks, forests, and conservancy organizations think their approach is the best, they are, in many ways, bedfellows. I believe that whoever or whatever is able to restructure EE in an accessible way around *decreasing consumerism while increasing environmental co-presence* will be able to promote a radically new path. While forestry is deeply immersed in consumer ideology, it is also in a position to lead in change, starting with the many dedicated forestry personnel who care about what they do. A first alternative direction for EE practices, then, would be for forestry to reevaluate its mission.

Next, I begin by making the case that, while radical restructuring of forest ideology would be ideal, there are also daily practices on the sites that can be addressed. To recap, I argue that the forests are socially and materially constructed places. For centuries in post-colonial North Carolina, humans have reworked the forests through farming, logging, plantations, and sapping and other extraction practices (Butler & Watson, 1984). The forests were reconstructed by the Civilian Conservation Corps and forestry management, where forestry created nurseries to replant forests. Even though the forests largely have been reconstructed, it remains difficult for most people to visually "see" this reconstruction; while they are constructed and managed, the forests are also beautiful and amazing places to be.

Essentially, I argue that smaller changes can help work around (and even directly confront) larger, more rigid, and slower changing cultural, forestry, and educational systems and reforms. This notion of bypassing points to whether or not it is possible to achieve fundamental paradigm shifts while still leaving material-symbolic practices intact. I argue that micro-level changes can use the same rangers, most of whom chose this occupation because they care about nature and children. The EE practices in these forests in many ways are a way to reproduce common sense acceptance of producer-consumer relations. The conceptual paradigm shift that could accompany these alternative practices could potentially lead to a critique of the producer-consumer context that forestry promotes. The alternatives I introduce here could possibly lead to rangers, children, and teachers critiquing and confronting the *producer-consumer* cycle and the *get close-stay* away tension. While critiques of EE practices and discussions of larger reform remain important, so do micro-level educational practices that can promote

multiple ways of seeing and push the boundaries of dualistic thinking. I argue these micro-level changes could be conducted in a way that does not threaten the science curriculum and forestry administration that so tightly binds what teachers, rangers, and children can do.

Reconceptualizing Space and Time: Crossing "The Bridge to Nowhere"

First, it would be ideal for rangers and teachers to revisit how they use the sites and time when children visit. To recap, children typically spend approximately four-hour blocks of time on the sites, moving between shorter classes and then to lunch. The classes are broken up into blocks of lecturing and activities. Although the primary site where I collected data is over 400 acres in size, I rarely saw students leave an approximately three-acre section that contains outdoor amphitheater classrooms, the talking-tree trail, and a picnic site. I observed that this routine—an ordered, disciplined, and compartmentalized way of doing the same lessons in the same pattern and in the same places over and over—often caused the rangers and children fatigue.

The first future direction, then, would be for educators to "take a different path" (Brown, 1986), to reconceptualize the way they allot space and time, a move that would help interrupt traditional boundaries. Instead of structured, patterned, timed lessons that teach students to get close but stay away and that nature is produced for humans to use, it is ideal for educators to guide longer nature walks on longer trails that exist in the forests, but remain mostly unused. On most sites, longer "forest management trials" meander through larger tracks of land and are less constructed than the talking trails or outdoor amphitheaters.

On one of these longer trails on one site, a bridge crosses a stream at the beginning of the trail. One ranger at this site called this bridge "the bride to nowhere" (See Figure 15). I found this interesting, considering that after that bridge the trail essentially became a nature trail, with less human intervention than in other areas. I never saw teachers guide students down this trail, and they never crossed the bridge. Instead of large structured lessons, rangers could take small groups on longer walks, with their packed lunches, and spend the entire time in and with the forests. While this can initially take the shape of rangers and chaperones taking the students into the trail, it can unfold into letting the children take the adults into the forest.[90]

[90] I believe it would be most ideal not to take the children anywhere at all; instead, let children truly go free throughout the site and come back to the group with lessons they have learned and can teach the others. After all, as Shepard (1995) argues, "Adults, weaned to the wrong music, cut short from their own potential, are not the best of mentors" (p. 39). While this would be ideal, I believe rangers, teachers, and parents would not be comfortable enough to do it, and it would also likely directly violate school fieldtrip and safety regulations. It might also be too radical for most adults, especially given how fearful most are of children's unstructured outdoor play. However, as a least intrusive solution, perhaps after a more structured "guide" as I have described here, children could be given a brief period toward the end of a field trip to more freely move about parts of the sites.

Figure 15. “The Bridge to Nowhere.”

Regardless of who takes who, the idea is to cross “the bridge to nowhere” to experience space and time in alternative ways. The notion that development makes natured spaces “somewhere” and that a lack of human intervention positions the alternative as “nowhere” is, in many ways, central to this project. The labeling of land and areas in “underdevelopment” terms has implications on how space and nature are conceptualized (Pyle, 2002). Pyle notes the importance of reconceptualizing space and time for children’s connection to nature, noting how both “developed” and “nondeveloped” play spaces need to be reconceptualized:

> Children are masters at making mountains out of molehills and trackless veldt from a prairie dog town in a farmed-out field. But they are also connoisseurs of surprise, mystery, and wildness writ small. The planner who attempts to plug in a

> structured playground or park in place of a scruffy canebrake or a sumac patch with a pond will fail. (p. 323)

Pyle (2002) asks us to reconsider how we conceptualize "waste ground" and "vacant lots" and resist the impulse to make "nowhere" into somewhere through development, a notion that is challenged in some rangers' opinions of whether or not the forest service should build indoor classrooms on the sites. That rangers call the undeveloped part of a trail "nowhere" illustrates the very nature-human divide on which these sites are built, and also shows how to exit this divide by physically going into the "nowhere." Escaping the routine of short guided tours, timed lessons, and large increments of lecturing and sitting would benefit the children, rangers, and teachers by providing the opportunity to experience *being with* and *of* the forests and places, rather than simply going to and moving through them.

Behavioral, Cognitive, and Emotional Modifications

After interrupting dualistic thinking through the reconceptualization of space and time, a number of practical behavioral, cognitive, and emotional modifications would benefit human-nature relationships in the forest sites. Describing a number of "pathways to nature" in nature observation, Brown (1986)[91] and others suggests practical tools to reorient people to their surroundings, and do so in less intrusive ways.

---

[91] I use Brown's writings, however, with caution. Tom Brown wrote a series of nature observation books, including *Tom Brown's Field Guide to Nature*. A naturalist and a tracker, Tom Brown claims to have been trained in tracking skills and nature spiritual philosophy by his grandfather's friend, who he claimed was a Lipan Apache elder named Stalking Wolf. I hesitate to rely on Brown too extensively because some representatives of an anti-cultural appropriation organization by the name of New Age Frauds and Plastic Shamans have denounced Brown as a fraud, and these complicate my advocating of Brown's techniques. The concern is that Brown has appropriated Native American practices, a move that can lead to a romanticized "turning to the Indian" for help. However, I do think Brown has a number of suggestions and writings that help reshape understanding of nature, and for this reason, I use Brown. Additionally, as previously mentioned, also important to remember is that Carbaugh's "listening" is specifically Blackfoot, and Carbaugh theorized the concept from his

First, specific behavioral techniques can help interrupt traditional human-nature dualistic thinking. These include immersing oneself in nature, slowing down, sitting down, being quiet, working through discomfort, letting go of time, and observing how nature is everywhere (Brown, 1986). Immersing oneself in nature would be addressed, again, by using the less constructed trails. While on the nature walks, the ranger can encourage the children to slow down and observe what is around them. Children can experience moving, sitting, and being quiet and present—a variation of behaviors and movement that reposition them being *with and of* the forest, rather than going to it or through it. Rangers can encourage students, teachers, and chaperones to take off their watches and let go of time.

The notion of "being quiet" differs from disciplinary instructions to "be quiet" that I observed; it is "listening" in a different way (Carbaugh, 1999). In disciplined environments, quietness is advocated as a way to keep the focus on the teacher (who is talking) and not on children or nature. However, here, "being quiet" evokes a mode of solitude and reflexivity, of not necessarily the lack of speaking, but the introduction of attending to the sounds of nature. To help children understand this, they can be told that in nature animals communicate more quietly; they communicate more through gestures and touch than through sound. It may also be interesting for children to be taught how to use simple sign language to communicate their observations with others, instead of speech (Brown, 1986). These behavioral techniques would help students get out of the get close-stay away bind by easing up on the intense "get close" messages while significantly reducing "stay away" instructions. Similarly, nature becomes something that

---

communication with one tribe member. Similar to Brown, Carbaugh (and I) evoke an indigenous person's teachings, which possibly can be seen as cultural appropriation.

"is" (and that is voiced in terms of a mediation framework, where nature and humans both "speak") versus something that is produced for people to use.

Alternative cognitive and emotional practices are additionally possible (Brown, 1986; Macy, 1995). These include clearing the mind; not analyzing; letting go of names, inhibitions, and prejudices; and learning from plants and animals (Brown, 1986). Rangers and teachers can encourage children and each other to clear their minds—to think of their minds as flowing water, where their thoughts are constantly being cleansed. Children can be told that if a thought enters their mind, to think of it as water—acknowledge it and then let it flow away.

While letting go of names is counter to the tenets of natural science and history, Brown (1986) argues there is a "tendency to learn the name and be done with it. Most people collect names instead of information and experience" (p. 24). Instead, people should "concentrate on concepts, feelings, and sensations … [and] interacting with the things you encounter" (Brown, 1986, p. 25). I believe it is possible to experience nature in this way while also learning scientific names. For example, in terms of naming, I typically saw educators tell students the names of things (without the student asking); if a student did ask, the educator would directly say the name. In contrast, if a child comes across something in the forest—a millipede, for example—and asks what it is, instead of directly answering with a name, and as Brown (1986) suggests, an educator can first say, "First, sit down and hold it in your hand." After the child holds and watches it, the ranger can ask, "How does it feel?" "How does it talk?" "How does it see?" and "What is it like" (Brown, 1986)? Perhaps the ranger could then ask the child "What would you name it?" or even, "Do you want to name it? If you do, what would it be named?" When moving

throughout the forest, the rangers can encourage children to let go of inhibitions by taking children off the trail, into the forest, and encouraging them to be spontaneous. I observed teachers, parents, and chaperones constantly telling children not to get dirty. However, getting dirty or wet can shift from a discomfort to a new experience. Additionally, rangers can encourage parents to become children again, to think back to "when they were young" and again feel like a child, including the joy of the moment and learning from the children.

In addition, there are ways to incorporate more multi-sensory experiences, and not just ocularcentric ways of experiencing the forests (Brown, 1986; Carbaugh, 1999). First, it is possible to look and see but to do so in different ways. In a recommendation to "look at the unfamiliar," Brown (1986) notes, "The key is to force the eyes to look at new things, and to see familiar objects as though looking at them for the first time" (Brown, 1986, p. 35). Taking "a new viewpoint" means, instead of looking down at a flower, get down and look at it from the ground level (Brown, 1986). The beauty is that the children I observed frequently did this on their own—they did not just look at the ground, they looked up, down, to the sides, and back. In "avoiding tunnel vision" Brown warns against "the preconditioned tendency to look for one thing or set of things in the environment to the exclusion of all others" (p. 36). The recommendation here is to change the focus of the eyes and vary vision—similar to what is done in some art pieces, where one must relax and refocus the eyes and an image will appear. Brown also points out that, when looking for animals, people make the mistake of looking too high. Instead, "get into the habit of lowering your gaze and looking into the brush and grasses instead of above or around them" (Brown, 1986, p. 39). Using "splatter vision" is another tool, where one

softens their eyes, looks toward the horizon, and allows their sight to spread out. In contrast, using magnified vision and focusing helps to focus, very carefully, on things to see surfaces, textures, colors, and patterns in different ways (Brown, 1986). In ocularcentric cultures, this new way of seeing is particularly appealing and has the potential to reduce outright rejection because it taps into existing ocularcentric assumptions.

Next, rangers and teachers can encourage different kinds of listening, smelling, touching, and tasting. Listening differently includes locating and amplifying sounds by physically placing the ears next to things; listening with intent and openness can expand how children and adults listen. Appreciating natural smells—from plants, animals, and earth are also important to reconstruct. Educators should ask children to familiarize themselves with odors, including: "Each time you find a den, burrow, or other animal indicator, get down and smell it. How would you characterize the odor? Is it musty, pungent, weak, sharp, or noxious?" (Brown, 1986, p. 54).

With touch, the idea is to greatly increase what children touch, and with the whole body (skin, feet, legs, arms) and not just the fingers. An ideal way to do this is close the eyes and becoming aware of other parts of the body and what they feel. When touching animals, Brown suggests "allow yourself to touch and be touched" (p. 57), including letting insects crawl up the arm or put on a foot. Rangers could easily bring a pouch of bird seed and see if children can use it to attract a bird and let the bird rest on their hand. With taste, the rangers can encourage children to taste more things in nature, including the distinct and sharp taste of a sourwood tree.[92]

[92] Rendezvous Mountain ESF has incorporated more senses. The site has a "textural trail," which, according to the trailhead sign, gives "the experience of sensing the forest through hearing, feeling and

These alternative practices would benefit rangers and adults as much as children. The effects that new practices would have on rangers and adults are important. I frequently observed that the routine of lessons could be difficult on the rangers and adults; as the primary actors in the lessons, rangers were often fatigued at doing the same lesson multiple times in one day. This new type of lesson would help decrease rangers' and chaperones' fatigue by providing alternative teaching methods. In interviews, rangers expressed their desire to see children become more hands-on and inquisitive. Alternative practices offer the potential to inform a larger scale paradigm sift.

There are a number of important caveats and limitations that are important to address. Larger class sizes—typically upward of thirty students—make smaller nature tours difficult. As most of the sites have only a few rangers working at a time, large groups of 100 students make it impossible to create smaller groups. However, large groups may be addressed by having smaller groups of students visit the sites at a time. Additionally, rangers can employ more help from teachers, parents, and chaperones, incorporating them as active participants versus their traditional role of passive observer and disciplinarian. Parents and chaperones have an important role here and they, too, can be encouraged to become children themselves, again leading to larger paradigm shifts.[93]

---

smelling, rather than just by seeing as we usually do." On a trail that has a rope with knots, rangers blindfold students; student must follow their way through the trail by using and experiencing their different senses. Yet, I found this kind of multi-sensory encouragement an anomaly in the forest sites.

[93] One chronic issue that rangers frequently bemoaned was adults' use of cell phones during the lessons. During the lessons I observed adults making and answering phone calls and texting, sometimes speaking on a phone at full volume during a lesson. I even observed several children carrying cell phones. To handle this, I wonder if the rangers can institute a "no cell phone policy" on the sites, where rangers would insist adults and children not use technology during the nature walks. I believe, in this case, rangers could use their authority, as most of the teachers, parents, and chaperones do defer to the rangers.

In addition, to tackle the class-size issue, one future direction would be to use interns. Most of the forest sites are close to universities and colleges, many with extensive natural science and forestry programs. High schools would be another great resource from which to pool interns. While it is highly unlikely that interns can be paid, using them would be a way to help reshape future environmental educators and give interns applied experience to list on their resumes. Because the forests are open to classes only from March to November, interns could be easily and efficiently trained in the interim (December to February). Advanced interns could then even be used to train new interns and even help run the intern program, gaining even more leadership and organizational experience. Important to note, however, is that the interns would need to be trained differently, in ways that incorporate both traditional and alterative ideologies and practices.

In sum, the alternative directions for EE practices that I have discussed above are briefly summarized below:

1. *Reevaluate Forestry's and EE's Mission*: Reconceptualize the role that forestry plays in consumer practices.
2. *Reconceptualize place and time:* Longer nature walks on less-structured trails; decrease use of outdoor classrooms, indoor classrooms, guided trails, long periods of sitting, and structured lessons; collapse classes into a larger time block.
3. *Use behavioral, cognitive, and emotional modifications*: Slow down, clear the mind, let go of names, incorporate emotion.
4. *Incorporate multi sensory experiences.*
5. *Use smaller student groups.*

6. *Incorporate teachers, parents, and chaperones into the lessons.*
7. *Implement an intern program:* Use local college and high school students to help keep group sizes small, to train future nature leaders in alternative techniques, to allow interns experience, and to keep costs down.

The Case of the Interrupting Bird

I would like to take a previous example that I presented above—the case of the interrupting bird—and offer it in an alternative light. This example provides a micro-level way that alternative practices can be enacted. Instead of the interaction I observed, and using the above recommendations, I would like to offer a brief hypothetical narrative of an alternative way educators can use the case of the interrupting bird in a different light:

> While the instructor was speaking about identifying a tree by its leaves, a bird flew into the shelter, hovered above a nest, and then flew out. A child excitedly pointed to the bird and said, “Look at the bird! And he made a nest!” The teacher and the older chaperone paused and turned to observe the bird nest. The teacher says, “What a great time to notice the birds! Let’s remain quiet and observe the nest and surroundings. Let’s see if the bird will come back.” The teacher asks the students not to speak and be present with the nest and birds; if they want to communicate, they can point and use sign language, but they are encouraged to mostly “listen.” The chaperone assists the teacher by remaining silent and quieting the children. The teacher replies to any talking students, “Shh, don’t interrupt the bird. This is kind of an important thing, alright?” After a moment of silence, the teacher asks, “What did you see? What did you hear? Did the bird speak? What did it say?” The teacher continues, “Are there any scents in the air?

> What is the wind direction? Do you see anything on the ground the bird may have left?" The ranger and chaperone then relate the incident to the birds and trees interrelatedness. The instructor asks, "What does this bird teach us about trees and forests?" The instructor, chaperone, and children have a conversation identifying a tree by its leaves, naming the type of bird, and noting how the scientific study of birds is called "ornithology."

This alternative narrative points to a different way to perceive the interaction that privileges the forest and its entities rather than the disciplined and organized world created by humans.

Respeaking for/with Nature

Last, I would like to offer an example of respeaking for and with nature, specifically an alternative script that can be used in a talking tree post. In the trails, the talking trees are valued by the rangers and forest service and I believe it is not likely that they would (or perhaps even should) be dismantled; talking trees are the "celebrities" that rangers and forestry believe make the sites memorable. While I believe rangers would be hesitant to take down the posts, perhaps the recordings can be changed. Additionally, in terms of mediation, one particularly interesting notion about the talking trails is that they potentially illustrate how humans still are connected to the notion that "nature speaks" in some way, even within the particular constructs and contexts I found in the sites.

The following is one possible example of what may be said in a "talking *with* trees" recording:

> First, stop, have a seat, and be present with me for a while. What do you hear? What do you smell? What do you feel? [10-second pause] Touch my bark and

> leaves and the ground around me. Go ahead – I'll wait! [10-second pause] Put one of the leaves you picked in your mouth and taste it—go ahead, on this tree it's not poisonous. What does it taste like? [10-second pause] What do you feel when you look at me? Now, close your eyes for a minute; what do you feel when you close your eyes?

This alternative talking-tree recording points to different ways to perceive trees and forests. After positioning the trail as a talking with trees trail, the child is asked to listen to the trees in different ways, without the initial and immediate interpretation of science and other dualistic and master discourses. The recordings give children the time to ponder their responses, and children's senses are evoked.

Final Thoughts

As previously mentioned in the methods chapter, I decided to insert the personal into this project. As White so eloquently notes (2007), "You cannot defeat something that you imagine to be an external threat to you when it is in fact internal to you, when its life is your life" (p. 16). My entry into the sites and my experiences were, in many ways, like those of the children I observed. I found myself being educated alongside them—learning the names of trees, noticing the subtle differences between leaves, reveling over how paper is made, screaming at wasps (always in front of the rangers, to my dismay), being shocked by the bitter taste of a sourwood leaf, responding curiously to talking trees, and gasping at an enormous deer in the forest who looked at me. I began to look forward to spending time with the rangers and felt a sense of community with them. Going to the sites and being with the forests brought me a sense of calm.

After completing my data collection, whenever I hear a bird chirp, I think of the strange case of the interrupting bird that flew, when it was not supposed to, into a classroom shelter. It caught a child's attention, flustered a teacher and a chaperone, and gave me the idea that nature can interrupt humans and mediate human-nature relations. When I hear a bird, I wonder how it might be "speaking" to me.

The rangers with whom I worked and the trees that I learned about offered me enormous insight into environmental education practices and human-nature relations. The kind of place-based forest environmental education that I envision is one that helps humans (of all ages) make the move to reconnect inward while going outward, creating a kind of self-reflexive co-presence with nature. Performative acts of resistance from humans and nature can articulate different kinds of connections with each other that consume the nature-culture gap. Instead of returning to the same kinds of spaces, humans need to start from different places and begin to ask difficult and different questions.

Appendix A: Interview Guide

Seven Groups of Questions:

1. Environmental Education (EE) and Educational State Forests (ESF)

1. What is the main goal of EE in this ESF site?
2. What approach does EE and Project Learning Tree curriculum take?
    a. What perspective does EE promote?
3. What do rangers communicate about the forest and nature during the lessons?
4. How do you view EE?
5. Do you think an individual ranger's beliefs and behaviors shape their teaching? How?
6. What is the difference between EE and environmental advocacy?

2. Site/Space

7. How were the forest/trails/space set up and designed?
8. What is a ranger's main job in relation to the site/space?
9. In the "forest demonstration trail," what is being demonstrated?
10. Anything special/noteworthy about this site in particular?

3. Student Behavior

11. How does what children do in this forest compare to what they do in the classroom?
12. What is your perception/feeling about how children behave when they arrive for their lessons? Do you notice any behaviors that are interesting or unusual (pointing to helicopter)?
13. What is your perception/feeling about how children behave in general on site?
14. How do children make sense of the forest?
15. How would you prefer them to act? What would be an "ideal" experience/reaction?
16. What are some common or typical responses students have during lessons?
17. What do you want the students to take away from their experience at the forest?
18. How do children experience and perceive nature/outdoors today versus when you were young?
    a. What do you think causes it?
    b. What are the implications of it?
    c. How are children's actions influenced by larger issues in society?
19. Can you describe how children may come to this educational forest setting but find it difficult to step outside of their typical play patterns and situations?
    a. In your opinion, why do children behave in this way?
    b. How do you personally feel about this behavior?
20. What do children say about gender during lessons?
21. Can you tell a memorable story about something a child did or said during a lesson?
22. How to negotiate touch/don't touch.

4. Parents/Teacher Topics

23. Can you tell a memorable story about something a parent or teacher did or said?
24. How do you think teachers/counselors/parents behave on the site? How do they make sense of the site?
25. What do you think is a teacher's role on site?

5. Curriculum

26. Do you think the No Child Left Behind Act of 2001 has influenced EE? If so, how?
27. Do the classes have to meet the state science curriculum? What if you taught something that didn't? What kind of flexibility do you feel you have?

6. Learning

28. What do you think of the notion of naming? What is it that makes humans feel the need to name and classify things?
29. Are commercial interests linked to this site?
30. Can you give me a metaphor for nature?

7. Personal/Background

31. Why did you get into this line of work?
32. What are the benefits and challenges to this job? Concerns?
33. Do you feel any constraints or pressures?
34. As a female, how does it seem to be a female in this industry/forest service?
35. What would you say if someone asked you if you are an environmentalist?
36. How do you feel about your relationship with your coworkers?
37. Do you have anything else to add?
38. Who should I interview next?

Appendix B: Chart Summarizing Nature-Deficit Disorder and Schizophrenia Diagnoses

	Nature-Deficit Disorder	***Schizophrenia***
Underlying Assumptions	• Children's behaviors and lifestyles	• Adults' and cultural psyches, relationships, and lifestyles
	• Caused by physically going outside less; child bodies are limited in unstructured natured spaces	• Caused by psychologically going inside less; adult and child psyches and bodies are limited in spaces
	• Something "has changed radically" for the worst in past three generations	• Materiality of environmental issues may have changed, but underlying pathologies have not
Causes of Problem	• Technology • Shrinking open spaces • Criminalization of play • Changing neighborhoods • Environmental legislation • Fear and protectionism • Organized sports • Move away from natural science • Changed behaviors in nature	• Dualistic thinking and binaries • Over rationalization (science) • Extraction of emotions • Perception of "nature" as pure • Using natural science framing • Damaged human-human relations • Schizophrenic ways of perceiving and relating
Symptoms of Problem	• Not going outside anymore • Not seeing children outside anymore	• Nature-deficit disorder • Psychological/emotional alienation • Auditory hallucinations (talking trees) • Delusions (humans are in control) • Paranoia (about not having control) • Social dysfunction (shutting off from nature and humans)
	• Obesity • ADHD • Depression • Behavioral difficulties • Decreased emotional and physical wellbeing • Dulled Senses	
Perceptions of Humans & Nature	• Uses holistic and ecological rhetoric, but ultimately treats humans and nature as separate	• Humans and nature are severed • Perceives human-nature co-presence and interrelatedness
Solutions	• Go outside (outward movement)	• Go inside (a psychological and culturally inward movement), then go outside
	• Use natural science curriculum	• Avoid natural science framing only
	• Being out and active in and through "natured" places	• Being inward and reflective in psychological places; being

		inward and reflective in/of "natured" places
	• Turns to one tenet of ecopsychology (using nature to heal)	• Turns to both tenets of ecopsychology (turning within while using nature to heal)
	• Pass *No Child Left Inside* legislation	• Rewrite legislation
	• Different groups can conform to NDD's assumptions and solutions	• Adopt different groups' assumptions and solutions (ecojustice, Native American advocates, environmental racism, ecofeminists, deep ecologists) • Incorporates environmental racism
	• Advocates governmentally supported place-based education in parks and forests	
	• Believes in the power of institutions and individuals to bring to enact that change	
Implications	• Reinforces human-nature binary through anthropocentric practices • Entrenched in traditional Western environmental narratives	• Reinforces human-nature inclusion through holistic mediation practices • Entrenched in varying environmental narratives
	• Worsens environmental alienation	• Interrupts environmental alienation
How Advocated Practices Materialized on NCESF Sites	• Nature is organized and contained in scientific, managed, gendered, and disciplinary ways • Focus on competitiveness, naming, and ocularcentrism • Nature is a physical place to go to and through • Large, timed, structured classes	• Nature is impulsive, uncontained • Focus on inclusion, co-presence, and collaboration • Deemphasizes naming and ocularcentrism; incorporates all senses • Nature is everywhere; nature is a place to be of and with • Small, unstructured sessions
	• Nature is made for humans to use • Trees and forests are appropriated for consumerism	• Humans are made by and within nature • Consumerism directly confronted
	• Humans are in control • Logic emphasized; emotions deemphasized • Hear humans speak for nature • Emphasizes *get close-stay away* dialectic and *production-consumption-production* context	• Humans are not in control • Emotions are emphasized; logic is deemphasized • Hear nature speak for itself • Interrupts and complicates *get close-stay away* dialectic and *production-consumption-production* context

References

About DENR. (n.d.). *NCDENR*. Retrieved November 5, 2009, from http://www.enr.state.nc.us/

Adams, C. (1990). *The sexual politics of meat*. New York: Continuum.

Agyeman, J. (1998). Teaching urban nature at Key Stage 2 in England: Looking at what is there, not at what ecologists say should be there. *Environmental Education Research, 4*(2), 139-154.

Aini Mat, S., Yahaya, N., & Ahmadun, F. R. (2007). Environmental comprehension and participation of Malaysian secondary school students. *Environmental Education Research, 13*(1), 17-31.

Ali, I. (2002). Kenyan children's ideas about parks and wildlife. *Environmental Education Research, 8*(4), 439-462.

Alp, E., Ertepinar, H., Tekkaya, C., & Yilmaz, A. (2008). A survey on Turkish elementary school students' environmental friendly behaviours and associated variables. *Environmental Education Research, 14*(2), 129-143.

Anderson, A. (1997). *Media, culture and the environment*. New Brunswick, NJ: Rutgers University Press.

Armstrong, J. (1995). Keepers of the Earth. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 316-324). San Francisco: Sierra Club Books.

Ballantyne, R., Connell, S., & Fien, J. (2006). Students as catalysts of environmental change: A framework for researching intergenerational influence through environmental education. *Environmental Education Research, 12*(3), 413-427.

Banerjee, S., Gulas, C. S., & Iyer, E. (1995). Shades of green. *Journal of Advertising, 24*(2), 21-32.

Barlowe, A. (1584/1965). A model reconnaissance report: Arthur Barlowe to Walter Raleigh. In L. B. Wright (Ed.), *The Elizabethan's America* (pp. 103-113). Cambridge, MA: Harvard University Press.

Baxter, L. (1988). A dialectical perspective on communication strategies in relationship development. In S. W. Duck, D. F. Hay, S. E. Hobfoll, W. Iches, & B. Montgomery (Eds.), *Handbook of personal relationships* (pp. 257-273). London: Wiley.

Baxter, L. (1990). Dialectical contradictions in relational development. *Journal of Social and Personal Relationships, 7*, 69-88.

Baxter, L. (1993). The social side of personal relationships. In S. W. Duck (Ed.), *Understanding relationship processes: 3. Social context and relationships* (pp. 139-165). Newburry Park, CA: Sage.

Benton, L. M. (1995). Selling the natural or selling out? Exploring environmental merchandising. *Environmental Ethics, 17*, 3-22.

Berger, J. (1980). *About looking*. New York: Random House.

Bergoffen, W. (1976). *100 years of federal forestry*. Washington: USDA Forest Service.

Bernard, H. R. (2006). *Research methods in anthropology: Qualitative and quantitative approaches.* Lanham, MD: Rowman & Littlefield.

Berry, T. (1999). *The great work: Our way into the future* New York: Harmony/Bell Tower.

Blair, C., Dickinson, G., & Ott, B. L. (2010). Rhetoric/memory/place. In C. Blair, G. Dickinson & B. Ott (Eds.), *Places of public memory: The rhetoric of museums and memorials*. Tuscaloosa: University of Alabama Press.

Blanchet-Cohen, N. (2008). Taking a stance: Child agency across the dimensions of early adolescents' environmental involvement. *Environmental Education Research, 14*(3), 257-272.

Bowers, C. A. (2001). How language limits our understanding of environmental education. *Environmental Education Research, 7*(2), 141-151.

Bowers, C. A. (2002). Toward an eco-justice pedagogy. *Environmental Education Research, 8*(1), 21-34.

Bowers, C. A. (2008). Why a critical pedagogy of place is an oxymoron. *Environmental Education Research, 14*(3), 325-335.

Briggs, C. L. (1986). *Learning how to ask*. Cambridge: Cambridge University Press.

Brown, T. (1986). *Tom Brown's field guide to nature observation and tracking*. New York: Berkeley Books.

Bulbeck, C. (2005). *Facing the wild: Ecotourism, conservation and animal encounters*. London & Sterling, VA: Earthscan.

Bullard, R. D. (2001). Environmental justice in the 21st century: Race still matters. *Phylon, 49*(3/4), 151-171.

Bullis, C. (1996). Retalking environmental discourses from a feminist perspective: The radical potential of ecofeminist. In J. G. Cantrill & C. L. Oravec (Eds.), *The symbolic earth: Discourse and our creation of the environment* (pp. 123-150). Lexington: University of Kentucky Press.

Burke, K. (1945). *A grammar of motives*. Berkeley, CA: University of California Press.

Burnett, G. (2007). *Trying Leviathan: The nineteenth-century New York case that put the whale on trial and challenged the order of nature*. Princeton: Princeton University Press.

Butler, J. (1993). *Bodies that matter: On the discursive limits of "sex."* New York: Routledge.

Butler, L. S., & Watson, A. D. (1984). *The North Carolina experience: An interpretive and documentary approach*. Chapel Hill: University of North Carolina Press.

Carbaugh, D. (1996). Naturalizing communication and culture. In J. G. Cantrill & C. L. Oravec (Eds.), *The symbolic earth* (pp. 38-58). Lexington, KY: The University of Kentucky Press.

Carbaugh, D. (1999). "Just listen": "Listening" and landscape among the Blackfeet. *Western Journal of Communication, 63*(3), 250-270.

Carbaugh, D. (2001). "The mountain" and "the project": Dueling depictions of a natural environment. In A. Fill & P. Muhlhausler (Eds.), *The ecolinguistics reader: Language, ecology, and environment* (pp. 124-142). New York: Continuum.

Carbaugh, D. (2007). Quoting, "the environment": Touchstones on Earth. *Environmental Communication: A Journal of Nature and Culture, 1*(1), 64-73.

Carey, P. (1977). Crisis in the environment: A sociological perspective. *American Journal of Economics and Sociology, 36*(3), 263-273.

Carson, R. (1965). *The sense of wonder*. New York: Harper Row.

Castree, N., & Braun, B. (1998). The construction of nature and the nature of construction: Analytical and political tools for building survivable futures. In N.

Castree & B. Braun (Eds.), *Remaking reality: Nature at the millennium* (pp. 3-42). New York: Routledge.

Cavallaro, D. (2006). *Critical and cultural studies*. New Brunswick, NJ: Athlone Press.

Chawla, S. (2001). Linguistic and philosophical roots of our environmental crisis. In A. Fill & P. Muhlhausler (Eds.), *The Ecolinguistics reader: Language, ecology, and environment* (pp. 115-123). New York: Continuum.

Chenhansa, S., & Schleppegrell, M. (1998). Linguistic features of middle school environmental education texts. *Environmental Education Research, 4*(1), 53-66.

Cobb, E. (1977). *The ecology of imagination in childhood.* New York: Columbia University Press.

Cook, V. (2008). The field as a "pedagogical resource?" A critical analysis of students' affective engagement with the field environment. *Environmental Education Research, 14*(5), 507-517.

Corbett, J. B. (2003). A faint green sell: Advertising and the natural world. In M. Meister & P. M. Japp (Eds.), *Enviropop: Studies in environmental rhetoric and popular culture* (pp. 141-160). Westport, CT: Praeger.

Cox, R. (2006). *Environmental communication and the public sphere*. Thousand Oaks, CA: Sage.

Cox, R. (2007). Nature's “crisis disciplines”: Does environmental communication have an ethical duty? *Environmental Communication: A Journal of Nature and Culture, 1*, 5-20.

Cox, R. (2010). Beyond frames: Recovering the strategic in climate communication. *Environmental Communication: A Journal of Nature and Culture, 4*(1), 122-133.

Cronon, W. (1996a). Introduction: In search of nature. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 23-67). New York: W. W. Norton.

Cronon, W. (1996b). The trouble with wilderness; Or, getting back to the wrong nature. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 76-90). New York: W. W. Norton.

Cypher, J., & Higgs, E. (2001). Colonizing the imagination: Disney's Wilderness Lodge. In B. Herzogenrath (Ed.), *From virgin land to Disney World: Nature and its discontents in the USA of yesterday and today*. New York: Rodopi.

Darwin, C. (1859/2003). *The origin of species by means of natural selection, or the preservation of favored races in the struggle for life*. New York: Signet/Penguin.

Dauvergne, P. (2008). *The shadows of consumption: Consequences for the global environment*. Cambridge, MA: MIT Press.

Davis, S. G. (1996). "Touch the magic." In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 204-217). New York: W. W. Norton.

Delaney, D. (2001). Making nature/marking humans: Law as a site of (cultural) production. *Annals of the Association of American Geographers, 91*(3), 487-503.

Deleuze, G., & Guattari, F. (1983). *Anti-Oedipus: Capitalism and schizophrenia*. Minneapolis, MN: University of Minnesota Press.

Deleuze, G., & Guattari, F. (1987). Becoming-intense, becoming-animal, becoming imperceptible. In G. Deleuze, F. Guattari, & B. Massumi (Eds.), *A thousand plateaus: Capitalism and schizophrenia* (pp. 232-309). Minneapolis: University of Minnesota Press.

Demeritt, D. (2002). What is the "social construction" of nature? A typology and sympathetic critique. *Progress in Human Geography, 26*(6), 767-790.

Denzin, N. K. (2004). Remembering to forget: Lewis and Clark and Native Americans in Yellowstone. *Communication & Critical/Cultural Studies, 1*(3), 219-249.

Devereuz, P., Steele, J., & Kubrin, D. (1989). *Earthmind*. New York: Harper Row.

Dickinson, G., Ott, B. L., & Aoki, E. (2006). Spaces of remembering and forgetting: The reverent eye/I at the plains Indian museum. *Communication & Critical/Cultural Studies, 3*(1), 27-47.

Dixon, J. A., Foster, D. H., Durrheim, K., & Wilbraham, L. (1994). Discourse and the politics of space in South Africa: the 'squatter crisis.' *Discourse & Society, 5*, 277-296.

Dobrin, S., & Kidd, K. (2004). *Wild things: Childrens' culture and ecocriticism*. Detroit, MI: Wayne State University Press.

Durning, A. T. (1995). Are we happy yet? In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 68-76). San Francisco: Sierra Club Books.

Eames, C., Cowie, B., & Bolstad, R. (2008). An evaluation of characteristics of environmental education practice in New Zealand schools. *Environmental Education Research, 14*(1), 35-51.

Emerson, R., Fretz, R., & Shaw, L. (1995). *Writing ethnographic fieldnotes*. Chicago: The University of Chicago Press.

Escobar, A. (1996). Constructing nature: Elements for a post-structuralist political ecology. In S. Jones & G. Carswell (Eds.), *The earthscan reader in environment, development and rural livelihoods* (pp. 46-68). Sterling, VA: Earthscan.

Escobar, A. (1999). After nature: Steps to an antiessentialist political ecology. *Current Anthropology, 40*(1), 1-30.

Evans, M. M. (2002). "Nature" and environmental justice. In J. Adamson, M. M. Evans, & R. Stein (Eds.), *The environmental justice reader: Politics, poetics, and pedagogy* (pp. 181-193). Tucson, AZ: University of Arizona Press.

Ferguson, T. (2008). "Nature" and the "environment" in Jamaica's primary school curriculum guides. *Environmental Education Research, 14*(5), 559-577.

Fetterman, D. (1989). *Ethnography step by step*. Newbury Park: Sage.

Firth, R., & Winter, C. (2007). Constructing education for sustainable development: The secondary school geography curriculum and initial teacher training. *Environmental Education Research, 13*(5), 599-619.

Foss, K. A., & Foss, S. K. (1994). Personal experience as evidence in feminist scholarship. *Western Journal of Communication, 58*, 39-53.

Foss, S. K. (2009). *Rhetorical criticism: Exploration and practice* (4th ed.). Long Grove, IL: Waveland.

Foucault, M. (1966/1994). *The order of things: An archaeology of the human sciences*. New York: Vintage.

Foucault, M. (1977). *Discipline and punish: The birth of the prison*. New York: Random House.

Foust, C. R., & Murphy, W. O. S. (2009). Revealing and reframing apocalyptic tragedy in global warming discourse. *Environmental Communication: A Journal of Nature and Culture, 3*(2), 151-167.

Frey, L., Botan, C. H., Friedman, P. G., & Kreps, G. L. (1992). *Interpreting communication research.* Englewood Cliffs, NJ: Prentice.

Gallagher, V. (1995). Remembering together: Rhetorical integration and the case of the Martin Luther King, Jr. memorial. *Southern Communication Journal, 60,* 109-119.

Glendinning, C. (1995). Technology, trauma, and the wild. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 41-67). San Francisco: Sierra Club Books.

Glenn, C. B. (2004). Constructing consumables and consent: A critical analysis of factory farm industry discourse. *Journal of Communication Inquiry, 28*(1), 63-81.

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. New York: Harper Row.

Gonella, V. (2005). The contribution of Harold F. Searles to an emerging therapeutic relationship with a chronic schizophrenic man. *Journal of American Academy of Psychoanalysis, 33,* 705-724.

Good, J. (2006). Internet use and environmental attitudes: A social capital approach. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 211-233). Mahwah, NJ: Lawrence Erlbaum.

Goodman, L. A. (1961). Snowball sampling. *Annals of Mathematical Statistics, 32,* 148-170.

Griffin, R., & Dunwoody, S. (1995). Impacts of information subsidies and community structure on local press coverage of environmental contamination. *Journalism and Mass Communication Quarterly, 72*(2), 271-284.

Gruenewald, D. A. (2008). The best of both worlds: A critical pedagogy of place. *Environmental Education Research, 14*(3), 308-324.

Gruenewald, D. A., & Manteaw, B. O. (2007). Oil and water still: How No Child Left Behind limits and distorts environmental education in US schools. *Environmental Education Research, 13*(2), 171-188.

Guba, E. G., & Lincoln, Y. S. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (1998). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research* (pp. 195-220). London: Sage.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.

Hacking, I. (2000). *The social construction of what?* Boston: Harvard University Press.

Hamilton, J. D. (2005). Narrative inclusions and exclusions in a nuclear controversy. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 2, pp. 73-97). Mahwah, NJ: Lawrence Erlbaum.

Haraway, D. (1989). *Primate visions: Gender, race, and nature in the world of modern science.* New York: Routledge.

Haraway, D. (2007). *When species meet*. Minneapolis: University of Minnesota Press.

Hayles, N. K. (1996). Simulated nature and natural simulations: Rethinking the relation between the beholder and the world. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 409-425). New York: W. W. Norton.

Heimlich, J. E., & Ardoin, N. M. (2008). Understanding behavior to understand behavior change: A literature review. *Environmental Education Research, 14*(3), 215-237.

Hendry, J., & Cramer, J. (2005). The logic of colonization in the "what would Jesus drive?" anti-SUV campaign. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 2, pp. 115-131). Mahwah, NJ: Lawrence Erlbaum.

Hitzhusen, G. E. (2007). Judeo-Christian theology and the environment: Moving beyond scepticism to new sources for environmental education in the United States. *Environmental Education Research, 13*(1), 55-74.

Hobbes, T. (1651/1982). *Leviathan.* New York: Penguin Classics.

Hoffereth, S. L., & Sandberg, J. F. (2001). How American children spend their time. *Journal of Marriage and Family, 63,* 295-308.

Horkheimer, M., & Adorno, T. W. (1976). *Dialectic of enlightenment* (J. Cumming, Trans.). New York: Continuum International.

Huckle, J., & Stirling, S. (1996). *Education for sustainability*. London: Earthscan.

Jameson, F. (1991). *Postmodernism, or, the cultural logic of late capitalism.* Durham, NC: Duke University Press.

Johnson, B., & Manoli, C. C. (2008). Using Bogner and Wiseman's Model of Ecological Values to measure the impact of an earth education programme on children's environmental perceptions. *Environmental Education Research, 14*(2), 115-127.

Jung, M. (2001). Ecological criticism of language. In A. Fill & P. Muhlhausler (Eds.), *The Ecolinguistics reader: Language, ecology, and environment* (pp. 270-285). New York: Continuum.

Kahn, P. H. (2002). Children's affiliations with nature: Structure, development, and the problem of environmental general amnesia. In P. H. Kahn & S. R. Kellert (Eds.), *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp. 93-116). Cambridge, MA: MIT Press.

Kahn, P. H., & Kellert, S. R. (2002). *Children and nature: Psychological, sociocultural, and evolutionary investigations.* Cambridge, MA: MIT Press.

Kanner, A. D., & Gomes, M. E. (1995). The all-consuming self. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 77-91). San Francisco: Sierra Club Books.

Kaplan, E. (1997). *Looking for the other: Feminism, film, and the imperial gaze*. New York: Routledge.

King, D. L. (1995). *Doing their share to save the planet*. Piscataway, NJ: Rutgers University Press.

Kinsella, W. J. (1999). Discourse, Power, and Knowledge in the Management of "Big Science.". *Management Communication Quarterly, 13*(2), 171.

Kinsella, W. J. (2005). One hundred years of nuclear discourse: Four master themes and their implications for environmental communication. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 2, pp. 49-72). Mahwah, NJ: Lawrence Erlbaum.

Kirk, J., & Miller, M. L. (1986). *Reliability and validity in qualitative research*. Newbury Park: Sage.

Kosek, J. (2006). *Understories: The political life of forests in northern New Mexico*. Durham, NC: Duke University Press.

LaChapelle, D. (1992). *Sacred land, sacred sex: Rapture of the deep*. Asheville, NC: Kivaki Press.

Lakoff, G. (2010). Why it matters how we frame the environment. *Environmental Communication: A Journal of Nature and Culture, 4*(1), 70-81.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by* Chicago, IL: The University of Chicago Press.

Lange, J. I. (1990). Refusal to compromise: The case of Earth First! *Western Journal of Speech Communication, 54*, 473-494.

Lertzman, R. (2004). Ecopsychological theory and critical intervention. *Organization & Environment, 17,* 396-401.

Levine, D. M. (1987). Clinical stories: A modern self in the fury of being. In D. M. Levine (Ed.), *Pathologies of the modern self: Postmodern studies on narcissism, schizophrenia, and depression.* New York: New York University Press.

Lindlof, T., & Taylor, B. (2002). *Qualitative communication research methods*. Thousand Oaks, CA: Sage.

Locke, J. (1689/1997). Two treatises of government. In *Locke: Political essays*. Cambridge, MA: Cambridge University Press.

Lotz-Sisikta, H., & Schudel, I. (2007). Exploring the practical adequacy of the normative framework guiding South Africa's National Curriculum Statement. *Environmental Education Research, 13*(2), 245-263.

Louv, R. (2005). *Last child in the woods: Saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books.

Lutz, C., & Collins, J. (1993). *Reading National Geographic*. Chicago: University of Chicago Press.

Macy, J. (1995). Working through environmental despair. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 240-259). San Francisco: Sierra Club Books.

Macy, J., & Brown, M. Y. (1998). *Coming back to life. Practices to reconnect our lives, our world*. Gabriola Island, BC, Canada; Stony Creek, CT: New Society Publishers.

Madison, D. S. (2005). *Critical ethnography*. Thousand Oaks, CA: Sage.

Malone, K. (2007). The bubble-wrap generation: Children growing up in walled gardens. *Environmental Education Research, 13*(4), 513-527.

Malthus, T. (1798). *An essay on the principle of population*. London: Reeves and Turner.

Manning, R. (2004, February). The oil we eat. *Marper's Magazine,* 37-45.

Marafiote, T. (2008). The American dream: Technology, tourism, and the transformation of wilderness. *Environmental Communication: A Journal of Nature and Culture, 2*(2), 154-172.

Marafiote, T., & Plec, E. (2006). From dualisms to dialogism: Hybridity in discourse about the natural world. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 49-75). Mahwah, NJ: Lawrence Erlbaum.

Marx, K. (1986). In F. L. Bender (Ed.), *Karl Marx: The essential writings*. Boulder, CO: Westview Press.

Mason, J. (2002). *Qualitative researching*. Thousand Oaks, CA: Sage.

McKenzie, M. (2008). The places of pedagogy: Or, what we can do with culture through intersubjective experiences. *Environmental Education Research, 14*(3), 361-373.

McNaughton, M. J. (2007). Sustainable development education in Scottish schools: The Sleeping Beauty syndrome. *Environmental Education Research, 13*(5), 621-638.

Meister, M., Chamberlai, K., & Brown, A. (2006). Rejuvenating nature in commercial culture and the implications of the green commodity form. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 97-114). Mahwah, NJ: Lawrence Erlbaum.

Melville, H. (1851/2001). *Moby Dick*. New York: Penguin Classics.

Merchant, C. (1996). Reinventing Eden: Western culture as a recovery narrative. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nautre* (pp. 91-113). New York: W. W. Norton.

Metzner, R. (1995). The psychopathology of the human-nature relationship. In T. Roszak, M. E. Gomes & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 55-67). San Francisco: Sierra Club Books.

Milstein, T. (2008). When whales "speak for themselves": Communication as a mediating force in wildlife tourism. *Environmental Communication: A Journal of Nature and Culture, 2*(2), 173-192.

Milstein, T. (2009a). Environmental communication theories. In S. W. Littlejohn & K. A. Foss (Eds.), *Encyclopedia of Communication Theory* (pp. 344-349). Thousand Oaks, CA: Sage.

Milstein, T. (2009b). "Somethin' tells me it's all happening at the zoo": Discourse, power, and conservationism in the contemporary zoo. *Environmental Communication: A Journal of Culture and Nature, 3*(1), 25-48.

Minkel, J. R. (2009). Putting madness in its place. *Scientific American, 301*(5), 16-19.

Mitchell, D. (2007). Promote environmental education for children. *Charity Guide* Retrieved November 20, 2009, from http://www.charityguide.org/volunteer/fewhours/environmental-education.htm

Mitchell, T. (2002). Can the mosquito speak? In T. Mitchell (Ed.), *Rule of experts: Egypt, techno-politics, modernity* (pp. 19-53). Berkeley, CA: University of California Press.

Moore, D., Kosek, J., & Pandian, A. (2003). *Race, nature and the politics of difference.* Durham: Duke University Press.

Muhlhausler, P., & Peace, A. (2006). Environmental discourses. *Annual Review of Anthropology, 35*, 457-479.

Norton, T. (2007). The structuration of public participation: Organizing environmental control. *Environmental Communication: A Journal of Nature and Culture, 1*(2), 146-170.

Nuyen, A. T. (2008). Ecological education: What resources are there in Confucian ethics? *Environmental Education Research, 14*(2), 187-197.

Opel, A. (1999). Constructing purity: Bottled water and the commodification of nature. *Journal of American Culture, 22*(4), 67-76.

Opel, A. (2003). MonopolyTM the National Parks edition: Reading neo-liberal simulacra. In M. Meister & P. M. Japp (Eds.), *Enviropop: Studies in environmental rhetoric and popular culture* (pp. 31-44). Westport, CT: Praeger.

Oravec, C. L. (1981). John Muir, Yosemite, and the sublime response: A study of the rhetoric of preservationism. *Quarterly Journal of Speech, 67*(3), 245-258.

Oravec, C. L. (1984). Conservationism vs. preservationism: The public interest in the Hetch-Hetchy controversy. *Quarterly Journal of Speech, 70*(4), 444-458.

Oravec, C. L. (1996). To stand outside oneself: The sublime in the discourse of natural scenery. In J. G. Cantrill & C. L. Oravec (Eds.), *The symbolic earth: Discourse and our creation of the environment* (pp. 58-75). Lexington: University of Kentucky Press.

Peeples, J. A. (2005). Aggressive mimicry: The rhetoric of wise use and the environmental movement. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 2, pp. 1-17). Mahwah, NJ: Lawrence Erlbaum.

Pepper, D. (1984). *The roots of modern environmentalism*. London: Croom Helm.

Peterson, M. N., Peterson, M. J., & Peterson, T. R. (2007). Environmental communication: Why this crisis discipline should facilitate environmental democracy. *Environmental Communication: A Journal of Nature and Culture, 1*(1), 74-86.

Pezzullo, P. C. (2001). Performing critical interruptions: Stories, rhetorical invention, and the environmental justice movement. *Western Journal of Communication, 65*(1), 1-25.

Pezzullo, P. C. (2003). Touring "cancer alley," Louisiana: Performances of community and memory for environmental justice. *Text and Performance Quarterly, 23*(3), 226-252.

Pezzullo, P. C. (2006). Articulating "sexy" anti-toxic activism on screen: The cultural politics of a civil action and Erin Brockovich. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 21-48). Mahwah, NJ: Lawrence Erlbaum.

Pezzullo, P. C. (2007). *Toxic tourism: Rhetorics of pollution, travel, and environmental justice*. Tuscaloosa, AL: The University of Alabama Press.

PLT. (2004a). Connecting children to nautre. Retrieved January 2, 2010, from http://www.plt.org/cms/pages/21_19_241.html

PLT (2004b). Our mission and goals. Retrieved January 2, 2010, from http://www.plt.org/cms/pages/21_19_3.html

Plumwood, V. (1997). Androcentrism and anthropocentricism: Parallels and politics. In K. J. Warren (Ed.), *Ecofeminism: Women, culture, nature* (pp. 327-355). Bloomington: Indiana University Press.

Pratt, M. L. (1992). *Imperial eyes: Travel writing and transculturation*. London: Routledge.

Prelli, L. J., & Winters, T. S. (2009). Rhetorical features of green evangelicalism. *Environmental Communication: A Journal of Nature and Culture, 3*(2), 224-243.

Price, J. (1996). Looking for nature at the mall: A field guide to the Nature Company. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 186-217). New York: W. W. Norton.

Proctor, J. D. (1998). The social construction of nature: Relativist accusations, pragmatist and critical realist responses. *Annals of the Association of American Geographers, 88*(3), 352-376.

Pyle, R. (2002). Eden in a vacant lot: Special places, species, and kids in the neighborhood of life. In P. H. Kahn & S. R. Kellert (Eds.), *Children and nature: Psychological, sociocultural, and evolutionary investigations*. Cambridge, MA: MIT Press.

Rehling, D. L. (2003). When Hallmark calls upon nature: Images of nature in greeting cards. In M. Meister & P. M. Japp (Eds.), *Enviropop: Studies in environmental rhetoric and popular culture*. Westport, CT: Praeger.

Retzinger, J. P. (2003). Cultivating the agrarian myth in Hollywood films. In M. Meister & P. M. Japp (Eds.), *Enviropop: Studies in environmental rhetoric and popular culture*. Westport, CT: Praeger.

Rickinson, M. (2001). Learners and learning in environmental education: A critical review of the evidence. *Environmental Education Research, 7*(3), 207-320.

Rogers, R. A. (1998). Overcoming the objectification of nature in constitutive theories: Toward a transhuman, materialist theory of communication. *Western Journal of Communication, 62*(3), 244-272.

Rogers, R. A. (2006a). From cultural exchange to transculturation: A review and reconceptualization of cultural appropriation. *Communication Theory, 16*(4), 474-504.

Rogers, R. A. (2007). Deciphering Kokopelli: Masculinity in commodified appropriations of Native American imagery. *Communication & Critical/Cultural Studies, 4*(3), 233-255.

Rogers, R. A. (2008). Beasts, burgers, and hummers: Meat and the crisis of masculinity in contemporary television advertisements. *Environmental Communication: A Journal of Nature and Culture, 2*(3), 281-301.

Roszak, T. (1992). *Voice of the earth: An exploration of ecopsychology*. New York: Simon & Schuster.

Roszak, T., Gomes, M. E., & Kanner, A. D. (1995). *Ecopsychology: Restoring the earth, healing the mind*. San Francisco: Sierra Club Books.

Rousseau, J. J. (1762/1997). The social contract. In V. Gourevitch (Ed.), *The social contract and other essays*. Cambridge: Cambridge University Press.

Sack, R. D. (1986). *Human territoriality: Its theory and history*. Cambridge, MA: Cambridge University Press.

Saks, E. R. (2007). *The center cannot hold: My journey through madness*. New York: Hyperion.

Saukko, P. (2003). *Doing research in cultural studies: An introduction to classical and new methodological approaches*. Thousand Oaks, CA: Sage.

Saussure, F. (1965). *Course in general linguistics*. Peru, IL: Open Court.

Scharl, A. (2006). Catalyzing environmental communication through evolving Internet technology. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3). Mahwah, NJ: Lawrence Erlbaum.

Schultz, B. (2001). Language and the natural environment. In A. Fill & P. Muhlhausler (Eds.), *The Ecolinguistics reader: Language, ecology, and environment* (pp. 109-114). New York: Continuum.

Schutten, J. K. (2008). Chewing on the Grizzly Man: Getting to the meat of the matter. *Environmental Communication: A Journal of Nature and Culture, 2*(2), 193-211.

Science. (n.d.). *NC Standard Course of Study* Retrieved December 5, 2008, from http://www.dpi.state.nc.us/curriculum/science/

Segal, H. (2003). From Hiroshima to 11th September 2001 and after. *Psychodynamic Practice, 9*(3), 257-265.

Senecah, S. (2007). Impetus, mission, and future of the environmental communication commission/division: Are we still on track? Were we ever? *Environmental Communication: A Journal of Nature and Culture, 1,* 21-33.

Senecah, S., Depoe, S. P., Neuzil, M., & Walker, G. (2006). Introduction. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 1, pp. vii-xi). Mahwah, NJ: Lawrence Erlbaum.

Shepard, P. (1982). *Nature and madness*. San Francisco: Sierra Club Books.

Shepard, P. (1995). Nature and madness. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 21-40). San Francisco: Sierra Club Books.

Slack, J. D. (2008). Resisting ecocultural studies. *Cultural studies, 22*(3-4), 477-497.

Slawter, L. D. (2008). TreeHuggerTV: Re-visualizing environmental activism in the post-network era. *Environmental Communication: A Journal of Nature and Culture, 2*(2), 212-228.

Smith-Sebasto, N. J. (2000). Potential guidelines for conducting and reporting environmental education research: Qualitative methods of inquiry. *Environmental Education Research, 6*(1), 9-26.

Smith, M. J. (1998). *Ecologism: Towards ecological citizenship*. Minneapolis, MN: University of Minnesota Press.

Solar Energy International. (2006). Retrieved, April 2, 2009, from http://www.solarenergy.org/resources

Sorrells, K. (2003). Embodied negotiation: Commodification and cultural representation in the U.S. Southwest. In M. J. Collier (Ed.), *International and intercultural communication annual: Intercultural alliances: Critical transformation* (pp. 17-48). Thousand Oaks, CA: Sage.

Sovacool, B. K. (2008). Spheres of argument concerning oil exploration in the Arctic National Wildlife Refuge: A crisis of environmental rhetoric? *Environmental Communication: A Journal of Nature and Culture, 2*(3), 340-361.

Sowards, S. K. (2006). Rhetoric of the perpetual potential: A case study of the environmentalist movement to protect orangutans. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 115-135). Mahwah, NJ: Lawrence Erlbaum.

Spirn, A. W. (1996). Constructing nature: The legacy of Frederick Law Olmsted. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature.* New York: W. W. Norton.

Stibbe, A. (2001). Language, power and the social construction of animals. *Society & Animals, 9*(2), 145-161.

Strauss, A. (1987). *Qualitative analysis for social scientists*. Cambridge, UK: Cambridge University Press.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 273-285): Sage.

Sztybel, D. (2006). Can the treatment of animals be compared to the holocaust? *Ethics and the Environment, 11*(1), 97-132.

Taylor, E. W., & Caldarelli, M. (2004). Teaching beliefs of non-formal environmental educators: A perspective from state and local parks in the United States. *Environmental Education Research, 10*(4), 451-469.

Terry, J. (2000). Unnatural acts in nature: The scientific fascination with queer animals. *GLQ, 6*(2), 151-193.

Tine, R. V. (2000). Gaeaphobia: Ecophobia, ecomania and "otherness" in the late 20th century. *Gatherings: Seeking Ecopsychology* Retrieved February 1, 2010, from http://www.ecopsychology.org/journal/gatherings2/robin.htm

Todd, A. M. (2003). Prime-time subversion: The environmental rhetoric of the Simpsons. In M. Meister & P. M. Japp (Eds.), *Enviropop: Studies in environmental rhetoric and popular culture.* Westport, CT: Praeger.

Toker, C. W. (2005). The deliberative ideal and co-optation in the Georgia Ports Authority's stakeholder evaluation group. In S. Senecah (Ed.), *The environmental communication yearbook* (Vol. 2, pp. 19-48). Mahwah, NJ: Lawrence Erlbaum.

U.S. Department of Energy. (2006). Retrieved April 1, 2009, from http://www.energy.gov/

U.S. Energy Information Administration. (2008). *Country energy profiles*. Retrieved, April 1, 2009, from http://tonto.eia.doe.gov/country/index.cfm

Van Petegem, P., & Blieck, A. (2006). The environmental worldview of children: A cross-cultural perspective. *Environmental Education Research, 12*(5), 625-635.

Van Petegem, P., Blieck, A., & Van Ongevalle, J. (2007). Conceptions and awareness concerning environmental education: A Zimbabwean case-study in three secondary teacher education colleges. *Environmental Education Research, 13*(3), 287-306.

Velikovsky, I. (1981). *Mankind in Amnesia*. New York: Doubleday.

Waddell, C. (1998). *Landmark essays on rhetoric and the environment*. Mahwah, NJ: Lawrence Erlbaum.

Wals, A. E. J. (1994). Nobody planted it, it just grew! Young adolescents' perceptions and experiences of nature in the context of urban environmental education. *Children's Environments, 11*(3), 177-193.

Weaver, B. J. (1996)."What to do with the mountain people?": The darker side of the successful campaign to establish the Great Smokey Mountain National park. In J. G. Cantrill & C. Oravac (Eds.), *The symbolic earth* (pp. 151-175). Lexington, KY: The University of Kentucky Press.

Werder, O. (2006). Influences on the recycling behavior of young adults: Avenues for social marketing campaigns. In S. Depoe (Ed.), *The environmental communication yearbook* (Vol. 3, pp. 77-96). Mahwah, NJ: Lawrence Erlbaum.

Westra, L., & Lawson, B. (Eds.). (2001). *Faces of environmental racism: Confronting issues of gobal justice*. Lanham, MD: Rowman & Littlefield.

White, C. (2007). The idols of environmentalism. *Harper's Magazine, August*, 13-18.

White, R. (1995). *The remaking of the Columbia River*. Canada: Hill and Wang.

Wiley, E. (2002). Wilderness theatre: Environmental tourism and Cajun swamp tours. *The Drama Review, 46*(3), 118-131.

Willard, B. E. (2007). Rhetorical landscapes as epistemic: Revisiting Aldo Leopold's *A Sand County Almanac*. *Environmental Communication: A Journal of Nature and Culture, 1*(2), 218-235.

Williams, R. (1980). Ideas of nature. In R. Williams (Ed.), *Problems in materialism and culture* (pp. 67-85). London: Verso.

Wilson, A. (1992). *The culture of nature: North American landscape from Disney to Exxon Valdez*. Cambridge, MA: Blackwell.

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

Wolfe, D. (2007). Sidestepping environmental controversy through a rhetoric of security: George W. Bush in Summerhaven, Arizona. *Western Journal of Communication, 71*(1), 28-48.

Young, C. F., & Witter, J. A. (1997). Increasing interest in environmental text: The case of Gypsy Moth educational brochures. *Environmental Education Research, 3*(3), 299-309.

Zagacki, K. S., & Gallagher, V. J. (2009). Rhetoric and materiality in the Museum Park at the North Carolina Museum of Art. *Quarterly Journal of Speech*, *95*(2), 171-191.

Zukin, S. (1991). Disney World: The power of facade/the facade of power. In S. Zukin (Ed.), *Landscapes of power: From Detroit to Disney World* (pp. 217-250). Berkeley: University of California Press.