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Geographilia in Children's Urban Spaces: Investigating How Children Explore Outdoor Places and Connect with Natural Objects.

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GEOGRAPHILIA IN CHILDREN'S URBAN SPACES: INVESTIGATING HOW CHILDREN EXPLORE OUTDOOR PLACES AND CONNECT WITH NATURAL OBJECTS

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ABSTRACT

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The benefits children receive from outdoor play time are well documented by scholars across many disciplines. Interacting within an unstructured natural setting can foster physical, social, emotional, and spiritual growth. The lessons learned in such an environment not only help children reach developmental milestones; they also play an important role in the formation of beliefs and attitudes used in decision-making processes later in life. This is a significant point to make when one considers the crucial dynamics that exist between human activity and the wellbeing of the Earth. Decisions to take action to care for and preserve the Earth are influenced by how one feels about it. Indeed, the future health of the planet depends upon the quality of the exposure humans have to natural places and objects. Ultimately, the way a person understands and connects to the Earth can lead to a certain level of lived sustainability.

This thesis describes how "geographilia," or a love for the Earth, unfolds in children by examining the ways in which elementary children explore the outdoors in their urban Montessori school yard. Using primary methods of participant observation, mapping, and structured group interviews (as well as supplementary photographs), the researcher investigates three key aspects of children's exploration during their independent play in recess and their loosely supervised periods of physical education: 1) elements and places in the environment that are significant to the children; 2) ways children choose to interact with the environment when freed from immediate adult guidance; and 3) the children's explanations of what they value in their explorations of the natural world.

This research investigates how the children participating in the study carefully observe nature and make discoveries while working with natural objects. The researcher documents how children spend time outside each day throughout the year through hands-on opportunities exploring natural elements. The research shows that children build history with place while engaging in environmental lessons such as those involving seasonal changes, daily weather, and the changing surface of the landscape; and reflect on many higher-order issues such as life and death, stewardship of self, and the human-Earth relationship.

Children's actual experience with this natural space over time links them to one another, place, nature, and the Earth. The relationship forged early over time in childhood appears to have a significant impact on their lifelong connections with and relationship to the Earth. The development of love for the Earth, or geographilia, is reported in this work.

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TABLE OF CONTENTS

TABLES……vii

FIGURES……viii

CHAPTER ONE Introduction……..……1

A Natural Childhood……1

CHAPTER TWO Review of the Literature……...7

Investigating the Human--Nature Relationship.....7

The Education of Children: A Montessori Approach to the Study of Nature……13

Qualitative Research: A “Tomorrow Mind” for Teaching and Learning……16

CHAPTER THREE Research Methods……19

Research Setting: The Montessori School……19

My Role as Teacher……...25

Primary Research Setting: The Outdoor Campus……25

Research Design……32

Participant Observations……...34

Mapping and “Special Place Statements”……..36

Structured Group Interviews……38

Photographs……41

Research Questions……..41

CHAPTER FOUR Research Findings……..43

Children Describe their Experiences of Geographilia…….43

Key Elements of the Children's Primary Experiences……44

Connecting with Nature: Children Describe their Experiences of Geographilia.47

Children Carefully Observe Nature at Work……..48

Trees……49

Snow……54

Mud……...56

Children Connect with Nature by Play……58

Sticks……59

Bark……..63

Children Become Stewards of their Own Bodies, Selves, and One Another…..66

Children Identify How Nature Connects them to Various Parts of their Own Lives……71

Children Connect People to Landscapes……..73

Children See themselves as Stewards of Nature……75

Wildlife……76

CHAPTER FIVE Conclusions and Recommendations……79

APPENDIX A: Mapping and Special Place Statement Script……86

APPENDIX B: Structured Group Interview Script……87

APPENDIX C: Structured Group Interview Questions……88

REFERENCES……90

TABLES

3.1 Approximate Student Population by Gender…..…….……....19

3.2 Students by Level……20

3.3 Estimated School Population Diversity……20

3.4 Research Participants Grade and Gender Distributions……..……..33

4.1 Key Elements Referenced by Children in the Environment……..44

4.2 Smaller Herbaceous Plant Breakdowns…….45

4.3 Larger Woody Plants and Resulting Materials Breakdowns……46

FIGURES

1.1 Child in a Leaf Pile……4

1.2 Children Creating with Sticks……..6

3.1 Children with Raingear Building a Dam after a Hard Rain…..……..……24

3.2 Child Working with Mud after a Rainfall……..24

3.3 Children Sledding and Snowboarding during Physical Education Class…..27

3.4 Child with Beetle Discovered at Nature Camp……..…28

3.5 Children Digging with Sticks……29

3.6 Children in the Climbing Tree……..……30

3.7 Children Investigating the Natural Area……..…..……31

4.1 Children Building Stick Fort……..……...47

4.2 The Dead Tree in Front of the Natural Area.……..……50

4.3 Wooden Box on Playground where a Tree Once Stood…..……..……..…52

4.4 6th Grade Girl, Mapping Activity and Special Place Statement……....53

4.5 Child Snowboarding during Physical Education Class……..56

4.6 Middle School Student Proudly Displaying Mud on Shirt……58

4.7 Child Digging with Stick in Dirt…….……60

4.8 Fairy House Built of Found Bark…….……..…64

4.9 Children Making Salad with Milkweed Stalks on Bark……..…66

4.10 3rd Grade Girl, Mapping Activity and Special Place Statement……...68

4.11 Children Jumping in Straw Pile from Stacked Bales……69

4.12 Child Jumping in Leaf Pile……....70

4.13 Children Discuss a Fort Construction Plan……71

4.14 7th Grade Boy, Mapping Activity and Special Place Statement……..73

4.15 3rd Grade Girl, Mapping Activity and Special Place Statement……...75

4.16 Children Holding an Earthworm……..……...76

CHAPTER ONE

Introduction

A Natural Childhood

"The whole Earth has a heartbeat." 6th grade girl, group interviews

Childhood is a time of wonder and growth, a time when everything is a learning experience. Innately curious, children are characterized by what Maria Montessori, noted Italian physician, child educator, and founder of The Montessori Method of education, calls "absorbent minds". She states, "The child has a mind able to absorb knowledge. He [sic] has the power to teach himself" (Montessori 1995, 5-6). When we provide children with a stimulating environment, one that they can manipulate and interact with, then there is no end to the lessons they can learn. The child tirelessly explores the world through play and work.

Today most parents and educators in the United States seem to understand the concept of providing a rich and inviting environment in which children can thrive. Our schools and homes are filled with toys and supplies that are aimed at giving our children the best possible chances for success and happiness. Yet, one of the most valuable but commonly underused resources that we have to help our children to accomplish this end is just beyond our windows: the outdoors, the natural world. In the words of two children, in sixth and fourth grades: "We need fresh air to learn and free time to do what we want." "I like the outdoors and the Earth because it's beautiful." group interviews

Early experiences with nature enhance child development in many ways. The rich sensory environment of nature aligns with a child's desire to connect with his or her surroundings using all of the senses. Children grow physically as they run, jump, climb, balance, and actively participate with outside elements. These explorations can lead children to make important discoveries about their world and allow them to see how they fit into it. Montessori viewed nature as a fundamental force in the growth of youth. She proposes:

> Let the children be free; encourage them; let them run outside when it is raining; let them remove their shoes when they find a puddle of water; and when the grass of the meadows is damp with dew, let them run on it and trample it with their bare feet; let them rest peacefully when a tree invites them to sleep beneath its shade; let them shout and laugh when the sun wakes them in the morning as it wakes every other living creature that divides its day between waking and sleeping. (Montessori 1967, 68-69)

When given access to a rich and inviting outdoor atmosphere, children experience not only physical growth but also the learned ability to solve problems, to develop imagination, to manage stress, and to form connections that can benefit them throughout their lives. Positive feelings one associates with natural spaces and their various components can allow nature to enhance one's life over the long term (Kellert 2008, 153-160). Ultimately, such experiences are believed to be not just helpful for children, but needed for children in order to grow into happy and healthy adults. As another child observes: "It is uncomfortable to be inside so long." 3rd grade girl, group interviews

Too often in our contemporary society, however, exposure to the outside world is limited due to the structure of the school day. Most children in the United States spend the greater part of their days indoors, nine months out of the year.

The majority of daylight hours are spent in the classroom. While activities and interactions are geared for learning in this setting, very little opportunity is left for unstructured outdoor experiences. By the time children return home from school, nightfall is often near. In the group interviews I conducted with the children at school, one 6th grade girl writes: "Sometimes we just have a really busy schedule and forget about outside."

Homework and "screen time" commonly monopolize active outdoor playtime (Ginsburg 2007, 185). The result is, therefore, that most exposure to the outdoors happens at school, but it is very limited. With limitations placed on time spent in the natural environment, American children are not afforded much opportunity to develop a comfort level in these spaces. Children who spend most of their days in controlled indoor temperatures can have a harder time adjusting to natural seasonal changes, as one 3rd grade boy writes in the group interviews: "I hate being hot."

Maria Montessori used the term "sensitive period" to describe an intense period of focus children may display when learning about a subject (Montessori 1966, 37- 48). This critical period of development sparks cognitive, social and emotional growth. In terms of timing and benefits, this "sensitive period" may also apply to one's ability to appreciate the natural world. Readiness to learn to appreciate and to love the Earth may best happen within the small window of time in childhood. In fact, many attest to the belief that the deep bonds developed with nature are most often formed over time throughout childhood. The critical period of middle childhood, that time between the ages of six and

thirteen, is described by researcher David Sobel as “a critical period in development of the self and in the individual’s relationship to the natural world” (Sobel 2002, 51-52).

Figure 1.1 Child in Leaf Pile.

Even beyond the consequences of personal fulfillment, experiences in the natural world can help individuals to commit as adults to more sustainable lifestyles—those lifestyles that value and safeguard the condition of wildlife, places, and resources—and ultimately, the condition of our planet. “Geographilia” refers to those powerful emotional connections between humans and Earth that result in abiding love of the Earth, and that can lead people to take responsibility for the Earth in collective and long-term ways. According to research conducted by Louise Chawla, Professor in the College of Architecture and Planning at the University of Colorado:

> When children have access to the natural world, and family members encourage them to explore it and give close attention, they have a strong basis for interest in the environment. To turn this interest into activism, they later need to build on this foundation through education, membership in organizations, or the careers that they pursue; but from their childhood experiences in nature through their own free play and in the company of significant adults, they carry the memory that the natural world is a place of such full and positive meaning that it justifies their most persistent efforts to protect it. (Chawla 2006, 76)

Without the emotional connections between humans and the Earth, sustainable lifestyles likely will not be chosen. As Stephen Jay Gould writes, "We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well—for we will not fight to save what we do not love" (Orr 2004, 43).

What would it take to shift the trend to actively involving children at school in daily outdoor exploration? What can we learn from children themselves when they engage the natural world routinely? What can these children teach us about the process and results of "geographilia", or love for the Earth?

This thesis will describe a small study in which children were observed during part of a school year as they explore natural objects and favorite places in their urban Montessori school yard spaces. Such exploration is believed to promote a child's connection to the Earth. In particular, this thesis will investigate three key aspects of the children's exploration: 1) specific elements and places in the environment that appear significant to the children; 2) ways children choose to interact with the environment when freed from immediate adult guidance or influence; and 3) the children's explanations of what they take from and value in their explorations of the natural world. Reporting on children's experiences in

this way will reveal insights into how “geographilia,” or a love for the Earth, unfolds in children.

Figure 1.2 Children Creating with Sticks.

CHAPTER TWO

Review of the Literature

Investigating the Human—Nature Relationship

Investigating the ways in which humans connect with the natural environment has been of interest over history and across academic disciplines. Geography is often a home for this investigation, acting as a crossroads for scholars who are focused on the issue of relationships between the Earth and its people. The Montessori approach appears to build on earlier investigations of children, education, observational methods, and nature study, from Jean-Jacques Rousseau, Johann Heinrich Pestalozzi, Christian G. Salzmann, Carl Ritter, Friedrich Froebel, J.C.F. GutsMuths, and perhaps even Jean Piaget. Jean Piaget may have influenced Montessori if she had read some of his earliest writings. The Montessori Method was well established as Piaget wrote some of his better known works. They both shared similar interests, and due to timing it is unclear if they influenced each other. The method of Heimatkunde, German for home geography or neighborhood study, grew as a geography education approach, emphasizing active learning and primary outdoor experience (Koelsch 2002, 4). Heimatkunde has timeless qualities that are embraced within the Montessori method. Now, as much as ever, geographical research both draws from and supports work in other fields. As an outdoor educator conducting my first sustained project in practitioner research, I find this an especially exciting time to work in the field of geography.

A number of geographers have paved the way for the investigation of the children and nature relationship. In 1974, Geography scholar Yi-Fu Tuan published his work on the human-environmental bond, which he termed "Topophilia". Tuan's particular interest was the study of varied perceptions, attitudes, and values, and the impact on the bond. Tuan's study is broad and investigates such topics as cultural differences affecting the human affinity towards the environment. He offers only a general description of children and their relationship to their environment. Tuan felt there were many aspects of the human-environment bond to be investigated. He called for additional studies in areas such as the child- environment bond. More recently, the subject has been studied further. The relationship between the Earth and its peoples is the greatest issue facing us today, according to Roger Hart, Geographer and Professor of Environmental Psychology at the City University of New York. His research focuses on children's relationships to the natural environment. Roger Hart has written extensively on the connections children develop through their everyday experiences. In particular, he points out that children can play a role in sustainability through direct participation in their physical environment and the planning process. He has been involved in worldwide children's rights and outdoor play. He is particularly interested in the child's voice in community development. He has written on his experiences with different data gathering methods pertaining to children, including peer interviewing. He has been a supporter of child empowerment through their own research.

Many scholars such as David Orr and David Sobel have stated that for people to love the Earth and work towards its preservation, they first need to connect with and develop a love for it. Orr is a Professor of Environmental Studies and Politics at Oberlin College. He is known for his work in ecological literacy in higher education. Sobel is Professor of Education and Director of Place-Based Education at Antioch University New England. In a recent interview, he stated this about his research from the past few decades: "There are all these recurrent themes. The special place phenomenon is really widespread. And if themes such as forts and mapmaking can capture children's imagination, they can also be used to kindle their interest in the classroom."

Louise Chawla, Professor of Planning and Urban Design in the College of Architecture and Planning at the University of Colorado at Denver, researches children's informal experiences as they move through the environment. Chawla studies children and their connection to place and argues that there needs to be better understanding of the processes by which children connect with place and nature through outdoor free exploration. Chawla calls for concentrated research on children's experience of nature and their ties to nature. In her review of adult environmentalists, Chawla often found two common factors from their childhood; much time spent outdoors and an adult who taught respect for nature.

Lastly, a recent PhD dissertation, "Communicating Place: Methods for Understanding Children's Experience of Place" was written by Sofia Cele at Stockholm University in the Department of Human Geography in 2006. Cele's work argues that there is a need for more understanding of children's experience

and connection to place in their everyday lives, including how they physically use places.

Other disciplines intersect with geography to tell a story of how children grow from unstructured play time, especially in the outside world. The work of child development professor David Elkind supports this research because of his interest in the child and nature experience. David Elkind has published several books on child development. His work has been supportive of the Montessori method as one form of education that he considers a "model in practice" (Elkind 2007, 203). He also strongly values children's need for outdoor exploration for healthy development.

In the field of history, the subject of child's play adds value to the discussion of the child's experience in nature. Theorizing childhood itself as different from a period of time in which children are simply small adults, is a fairly modern phenomenon. The practice of sending children to school rather than to work at the age of six or seven is a recent change for humans, considering the length of time in which people have been on Earth. Howard Chudacoff, scholar of American history, addresses the history of children's free time in the United States. In his book *Children at Play: An American History*, he points out the changes that have occurred especially in the last few hundred years. Children once entertained themselves almost entirely outside, since indoor space was limited. Children played with found objects, either disposed of items or natural materials, as they "roved about in the fields and forests using nature as playfellows" (Chudacoff 2008, 29). Chudacoff (2008, 29) concludes that "nature

figured powerfully in the childhoods of early Americans". He traces the changes that have occurred to children's free time, from simple and unhurried to much of what children experience today: time that is over-structured, commercialized, rushed, inside, and achievement-oriented. Chudacoff believes that many adults have created an overcautious, over-supervised, and over-organized childhood and advises that "perhaps we should consider how and when to give kids more independence to explore their environment, create playthings, interact with other kids, and simply enjoy being young" (2008, 223).

Such changes in the landscape of children's free time is not surprising given the current state of the media—television and print—in the daily lives of many Americans. Many people view these forms of communication as presenting information that is truthful. The information viewers and readers actually receive, however, may not be the truth. Barry Glassner, scholar of sociology, researches society and fear. In his 2009 book, The *Culture of Fear: Why Americans are Afraid of the Wrong Things*, Glassner teases through research and the media's presentation of information. More often than not, he argues, if parts of facts are portrayed, they are sensationalized and simplified. Respected researchers appear as guests on seemingly reliable news programs and then have their messages simplified and modified in ways that no longer resemble their research results (Glassner 2009, 45). Fears result from a hyped, repetitive, continuously playing media, especially as television regulations (significantly loosened since the 1980s) result in increased exposure to inappropriate viewing material for children. Parents thus come to fear that their

children are exposed to more dangers than they themselves were as children. For example, child crime statistics for child abduction and murder have not necessarily increased and for some decreased (Glassner 2009, 60-65). Still, parents might feel the need to impose restrictions on their children for the sake of safety, limiting their children's freedom to wonder and explore outside.

Biologist E.O. Wilson constructed a theory of "biophilia," or "love of living systems," to describe the deep connections people feel toward other living creatures. In 1969, urban planner and landscape architect Ian McHarg wrote the classic book, *Design with Nature*, bringing forth the human and nature connection in the field of planning. From global economic development to anthropology and animal sciences, the child and nature relationship is vital to core ideas in various disciplines.

Biologist and environmentalist Rachel Carson helped legitimize investigations of the human-nature connection with her classic texts *Silent Spring*, her historical challenge to chemical usage, and *A Sense of Wonder*, in which she urges parents to explore wild spaces with their children in order to keep alive the child's "sense of wonder." In her book *A Sense of Wonder*, Carson writes of her experiences with her nephew Roger. She shares simple wisdom about how she and Roger explore outside her home on the Maine coastline. Her timeless insights below offer understanding of the story of my research. I am still amazed that now, more than fifty years after Rachel Carson's writings, we are still searching for the answers on how to connect with nature. There is little research on the actual beginning of the human and Earth

connection. Rachel Carson's writings convey so eloquently her theory of the human and Earth bonds formed early in life. It seems we are still trying to discover and prove what Rachel Carson knew, as she writes:

> I have made no conscious effort to name plants or animals nor to explain to him, but have just expressed my own pleasure in what we see, calling his attention to this or that but only as I would share discoveries with an older person. (Carson 1956, 18)
>
> A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the good fairy who is supposed to preside over the christening of all children I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life, as an unfailing antidote against the boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength. (Carson 1956, 42-43)
>
> I sincerely believe that for the child, and for the parent seeking to guide him, it is not half so important to know as to feel. It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate. (Carson 1956, 45)
>
> Exploring nature with your child is largely a matter of becoming receptive to what lies all around you. It is learning again to use your eyes, ears, nostrils and finger tips, opening up the disused channels of sensory impression. (Carson 1956, 52)

The Education of Children: A Montessori Approach to the Study of Nature

Education professionals may be aware of the disconnect that can exist between humans and nature. Educators may value the nurturing relationship but may not have the time to be responsible to it. Pressured to be accountable in many ways for what children learn, teachers may feel time constraints rather than a lack of interest in facilitating student relationships with the natural world. Fortunately, there are several powerful educational models that attach great

importance to the role of nature in the child's everyday life. Waldorf, Sudbury, Place-Based, and Montessori programs give time and energy to fostering a child's relationship with nature. All four programs make time for outside exploration on a daily basis.

A Montessori school is used at the research site for this thesis project. The work of Maria Montessori, in theory and in practice, offers insights as useful today as one hundred years ago. It is thought that the best time to connect a person to nature is during childhood. Maria Montessori, an Italian physician and child educator, is best known for developing the Montessori approach to the teaching and learning of young children. Montessori envisioned education as a response to the developmental "sensitive periods" of a child. She noted in her studies that children were instinctually drawn to the natural world and thrived within it. She noted the peacefulness children experience while spending time in the air and sun. She included the study of nature, free outdoor time, and immersion in the elements of Earth as part of her philosophy and curriculum for children from infants through adulthood.

In a Montessori space, whether inside or outside, children are able to move about in their natural environment and use their senses to explore the materials they are drawn to without the constant guidance and interruption of adults. The child is allowed to grow as an independent, confident, and capable person at his or her own pace. Although independence is a central theme, the classroom is not an open free-for-all. The "prepared environment" of each classroom is designed in a specific way with Montessori materials to provide

stimulating, experiential, sensory-rich choices. The children choose when to work with certain materials and work within a certain framework: materials are manipulative, concrete, and sequenced to lead children from simple to complex understandings. The children feel ownership in their work and enjoy using the materials to which they are drawn.

Through the Montessori Method, children acquire a lifelong love of learning. The "whole child" is nurtured and grows—physically, socially, emotionally, and intellectually. Children learn and investigate because they want to, and not because of another's agenda or external rewards. The writings of Maria Montessori detail the child's need to be free of the adult in their discoveries. Paula Polk Lillard (1972, 53) states: "Adults must be on their guard against tyrannizing (the child) and substituting their will for his." This protection of the child's choice is a key element in the Montessori Method. Adults in the environment allow the children to concentrate on work and refrain from disturbing children in that process. The adults allow the natural process of a child's learning to occur without being the keeper of knowledge. They realize that the child acquires knowledge through his or her own self-directed experience, using self-correcting classroom materials and seeking information or help from peers. The adult may often help the child to help herself by asking questions, rather than just providing answers.

Paula Polk Lillard and Angeline Stoll Lillard offer insight on the importance of nature as a vital "prepared environment" in the Montessori educational setting. P.P. Lillard (1972, 59) wrote: "Perhaps most important of all, the children must

have unhurried time in the woods and country to discover oneness with creation and absorb the wonder of the natural world." Their work directs a researcher's focus to the actual natural objects children choose to explore while they move about in their favorite natural places. Montessori (1964, 159) herself underscores the educational value of such natural experiences as she writes: "We have intimate communications with nature. The best means of invigorating the child is to immerse him in nature. It is well then, to develop this feeling of trust and confidence in living creatures, which is, moreover, a form of love, and of union with the universe."

Qualitative Research: A "Tomorrow Mind" for Teaching and Learning

Qualitative research methods, endorsed in other social science disciplines like anthropology and sociology, have emerged in Geography as modes of investigation that are legitimate and valuable, particularly in those studies which examine the experiences of children. According to Sharan Merriam (1998, 6), the primary philosophical assumption of qualitative research is that "qualitative researchers are interested in understanding the meaning people have constructed, that is, how they make sense of their world and the experiences they have in their world." Qualitative data collection methods and inductive research strategies can capture the vivid, personalized phenomena of how young people interact with place in order to develop a bond with nature. Richly detailed text and descriptive analyses can show the emotional attachment formed between humans and place. These thick bonds are clear only through examining the individual language of the study participants.

This study is also designed to position me as a participant-observer. This research role is consistent with my role as a Montessori teacher and benefits this research, and my teaching, in several specific ways. Observing and recording notes about the children and environment is a common, necessary, encouraged, and valued practice in a Montessori school. The data gathered is used for many purposes from record keeping to better designing the classrooms to serve the children best. In that sense, my research practices for this project emerge within ongoing work procedures that are familiar to students, trusted by them, and respected by them. These work procedures are grounded in students' needs and growth, rather than aimed simply at my own research agenda. Given my pre-existing relationships with my students and our understanding of my role, I can understand student insights—my best sources of knowledge and insight in this project—in more depth than would be possible if I were an outside or visiting researcher. It is likely, too, that their participation in my research can further strengthen our partnership.

Lastly, the design of the qualitative study itself can afford the research its best impact and use for those of us who teach. Performing qualitative research with my students encourages me to be systematic and intentional in my teaching, not simply during the research process but as I live with the research results. As a participant, I am challenged to develop knowledge of how children develop geographilia that will benefit my own community as well as also offer insights that are generalizable—useful to others in the educational community. As Merriam (1998, 1) further writes, "Research focused on discovery, insight, and

understanding from the perspective of those being studied offers the greatest promise of making significant contributions to the knowledge base and practice of education." As an active participant in my research setting (my school), I see that my research is useful—that the research enhances the learning of my students and me, and that it points me toward ways to enhance the learning experiences of my students in the years ahead. As Robin A. Kearns states on the participatory approach, "The approach has been adapted by geographers seeking to understand more fully the meanings of place and the contexts of everyday life" (Hay 2008, 195).

CHAPTER THREE

Research Methods

Research Setting: The Montessori School

The primary research setting for this project is a small Montessori school in south central Pennsylvania. It is located in a town about midway between Washington D.C. and New York City. The school is located within the city limits of a predominantly agrarian and suburban county.

This year, in 2010, the school celebrates twenty years of serving children. The school currently educates approximately 269 students; from toddler through teenage, in preschool through eighth grade. The students come from diverse backgrounds representing various ethnicities. Approximately forty seven faculty and staff tend the children and school, forty four females, three males and four of whom are founding teachers. The name of the school is not disclosed to ensure confidentiality. All data were confidential and names are withheld through mutual agreement including school name, school administrative data, and school handbook.

Table 3.1 Approximate Student Population by Gender
Male: 129
Female: 138
source: school administration data, 2008

Table 3.2 Students by Level

Toddler students (age 1.5 – 3):	19
Primary	
Pre-K students (age 2.5 -- 4):	105
Kindergarten (age 5 – 7):	32
Early Elementary (grades 1,2,3):	58
Upper Elementary (grades 4,5,6):	43
Middle School (7,8):	12

source: school administration data, 2008

Table 3.3 Estimated School Population Diversity

Asian, Pacific Islander, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, Samoan, other Asian:	19
Hispanic, Latino, Mexican, Puerto Rican, Cuban, Central or South American, or other Hispanic Culture or Region:	10
African:	11
Greek:	7
Middle Eastern, other Southern European, Italian:	15
Northern European:	232

source: school administration data, 2008

The school is known for its focus on families, and a passion for learning is supported for and by all members of the school community. As stated in the school handbook, the school's mission is articulated in this way:

> The mission of (this school) is to facilitate the unfolding of each child's unique potential through an outstanding Montessori education that enables a child to meet future challenges, and that encourages a love of learning, independent thinking, social responsibility and individuality in a peaceful atmosphere of respect and acceptance among children and adults.

The school's mission is accomplished through specific premises and deliberate methods. The school handbook states:

> that the school seeks to take an individualized approach to education by recognizing individual learning ability, interest, style and pace; promote self-esteem by encouraging independence and self-sufficiency; encourage respect for one another and for the environment; create a structured environment, balancing freedom of choice in learning; use a positive, gentle and consistent approach with each child; offer an environment rich in learning opportunities for each child's absorbent mind; provide uniquely designed and teacher-made Montessori materials for each child's learning needs; and recognize the importance of all areas of development, including the social, emotional, physical, and intellectual needs of growing children. source: school handbook, 2010

A theme throughout the school community is the goal of becoming knowledgeable stewards and citizens of place.

Classes are offered for toddler, primary, lower and upper elementary, and middle school students. Each class is facilitated by two teachers, at least one of whom is Montessori-certified (and as is often the case, both of whom are Montessori-certified). All classes except for the toddler are designed to be multi-age. Each primary and elementary class spans three years or grades: the primary class spans 3-6 years; the lower elementary class spans 6-9 years; and the upper elementary class spans 9-12 years. The middle school class includes seventh and eighth grades, spanning 12-14 years. The ages at each level can vary, depending upon where the child is in terms of emotional and academic development. Children can stay an extra year at any level if needed, so the actual grade at each level is not really discussed as much as the child's year in the program. It is not uncommon for children with summer or fall birthdays to be a fourth-year student, especially at the primary level. Being a fourth-year student

is really a non-issue. The idea of failure or negative association around the academic level of a child really does not exist. Children have even requested to stay at a level for a fourth year (this usually occurs at the elementary or middle school level). The children are who they are and continue to grow and proceed at their individual pace. The individual pace progression is an essential part of the Montessori classroom. Comparisons and competition among students are eliminated since everyone is doing her or his own work. At the same time, children are encouraged to help each other and to seek resources to direct their learning.

The multi-aged approach encourages the children to learn from each other. Peer learning and peer teaching foster a child-centered, independent environment. The opportunity for everyone to be a learner and a teacher exists. Over the years children get to experience being the youngest and the oldest, the nurtured and the nurturer, regardless of their number of siblings or birth order. The experiences practiced by taking care of each other and the environment allow for the peaceful unfolding of caring and compassionate people. Each day in every moment, the curriculum of Montessori grace and courtesy is lived and refined among children and adults.

The teacher is a quiet guide, on the periphery, always observing, resisting involvement unless absolutely necessary. The teachers carefully and purposefully prepare the inside and outside environments to foster independent learning.

As described earlier, in a Montessori environment, learning occurs through a child's interaction with the "whole environment", integrating sensory, tactile, and practical materials. The outside world is considered a key environment—another rich and ready "prepared environment"—in which the child can develop important skills and understandings. This school describes its outdoor experiences in this way:

> Primary children participate in activities that encourage coordination and control of movement such as walking in line to music and the silence game. They exercise every day outdoors or in the all-purpose room. Organized sports activities for elementary and middle school students include outdoor and indoor physical education games, teamwork and individual skill development. As the children grow older, we integrate their need for physical education with our practical life goal of community integration. source: school handbook, 2010

Consistent with these beliefs, teachers in this school have support for engaging in outside time whenever the opportunity arises. Classroom lessons are sometimes conducted outside, and every class at every level has at least one outdoor recess time daily and year-round, except in the case of severely inclement weather. Recess is relatively free of adult intervention. The children are free to wander in a set of designated areas, usually in a natural area near the school building or in the areas surrounding the playground. Children in grades one through eight also participate in outdoor physical education classes for one hour each week. Children are encouraged to have winter and rain gear ready and available as necessary. The children take responsibility for wearing clothes suitable for the weather.

Figure 3.1 Children with Raingear Building a Dam after a Hard Rain.

At 2nd grade they are encouraged to remember which days they have physical education because we may get dirty and possibly even muddy.

Figure 3.2 Child Working with Mud after a Rainfall.

My Role as Teacher

My work as a Montessori teacher is consistent with my position as a teacher researcher. As a teacher, I hold two different positions at the school. The first position is as an assistant primary teacher to children aged two through six years old, which includes kindergarten, in a morning-only classroom. My second position, which is in the afternoon, is that of the physical education teacher for the second through eighth grade, those students aged seven through fourteen years old. There is another physical education teacher for the first grade students and sometimes we will exchange or combine classes. On a typical day, though, unlike the usual design of team-teaching, physical education is usually facilitated by one teacher.

Outside as inside, as a Montessori teacher or "guide," I aim to provide guidance and structure for students only to the extent that these help the children to reveal and become themselves. The Montessori teacher is a keen observer of the child. Montessori believes that if we closely observe the child, his needs will be revealed. Maria Montessori (1964,108-109) wrote:

> The fundamental guide must be the method of observation, in which is included and understood the liberty of the child. So the teacher shall observe whether the child interests himself in the object, how he is interested in it, for how long, etc., even noticing the expression of his face. And she shall take great care not to offend the principles of liberty. For, if she provokes the child to make an unnatural effort, she will no longer know what is the spontaneous activity of the child.

Primary Research Setting: The Outdoor Campus

The primary research setting is that of the school's outdoor campus. The outdoor campus of each Montessori School can vary greatly from school to

school. Quite literally there may be no campus, for instance in a highly populated urban area, or there may be expansive campuses such as those of “farm schools” like the Hershey Montessori Farm School in Huntsburg, Ohio. Montessori schools are boarding and day schools, with varying resources and tuitions. Montessori schools can offer programs from infant through high school graduation. There are schools of all sizes, as well as private and even public settings, like the Montessori High School at University Circle in Cleveland, Ohio.

In the case of this research, the school’s 1941 four-story brick building is located along the entire east side of the campus. The main entrance of the building faces west, looking out over the school grounds. The building is located within the city limits, while the majority of the school grounds are located in the township. The campus is roughly a few acres. The dividing line of the city and the township runs right through the middle of the property. Students and staff can walk to many public and historic resources in the downtown city center. The students often walk to the downtown farmer’s market, the public library, and the opera house. The older students take weekly outings into the community and become involved with local projects.

In addition, the school is a half mile from a medium-sized city park with a great sledding hill, and the students walk there for physical education classes whenever it snows.

Figure 3.3 Children Sledding and Snowboarding during Physical Education Class.

About three-fourths of a mile southwest of the school, and certainly still within walking distance, is a 550-acre county park. This park has a large portion of its landscape within the city limits. It has thirty-five miles of hiking trails and is heavily forested. A river runs through it, along with smaller tributaries and creeks. In the summer, the school holds nature camp in the park.

Figure 3.4 Child with Beetle Discovered at Nature Camp.

The campus is located on the corner of an urban block, with public sidewalks running along the two streets and four-foot hedges separating the campus and the sidewalks. The driveway is asphalt and horseshoe-shaped, running through half of the property.

The campus can be described as child-centered and low maintenance. For purposes of this research, the campus can be seen as three central areas: an open space called the “fitness trail” within the horseshoe driveway, a natural area closer to the school, and the enclosed primary playground.

The central area within the driveway, called the “fitness trail,” is where the elementary children often play field games. The ground here is mostly hard-packed dirt. This is great ground for digging with sticks and finding treasures like pyrite (also called “monkey gold”). Along the edges are a few small climbing structures with rings and bars.

Figure 3.5 Children Digging with Sticks.

Within these parts of campus, there are many trees of various ages and types, from fully mature to seedlings. There are a number of large trees, including a huge holly tree ideal for climbing.

Figure 3.6 Children in the Climbing Tree.

There are simple, neglected flower beds containing herbs and other child-inviting plants. The beds are generally not trampled, but at the same time the children are certainly welcome to touch and investigate the beds. There is a small, wildish natural area of perhaps 50'X50' where violets and other local plants flourish. The children are free to go in and through this small, enchanted space, originally created to reduce run-off. There are some young trees and bushes in this area and, of course, child-created paths running through the middle from one end to the other. In this area, sometimes referred to as "the

garden" or "the natural area", there is a large fallen log that as many as four children can stand on at once. There are also a couple of large stumps and a very big dead tree, sometimes referred to as the "dead tree". Natural materials such as cones, leaves, branches and the like are always plentiful and available to the children.

Figure 3.7 Children Investigating the Natural Area.

For an urban space, our campus has quite a bit of wildlife. There are the usual earthworms, spiders and insects that are easily discovered by the children. There is also a variety of wildlife visible during the day, like squirrels, rabbits, voles, an occasional groundhog, songbirds, crows, and at least one hawk. One

day on the fitness trail, the hawk swooped right down to the ground in front of us and picked up a mouse and took it away. The children were amazed that it happened right in front of them.

Lastly, the campus also includes a small wooden fence-lined playground close to the school building. There is a very tall coniferous tree with a soaring canopy right outside the small play area. On occasion, we see a hawk way up in the canopy, sometimes eating a squirrel. What a sight for everyone. This play area has an artificial padded surface, a climber, and a small jungle gym. This area was constructed mostly for the toddler and primary students, but anyone can use it. Within that play area is a stump enclosed by a wooden box for the children to sit around. Years ago this spot was the location of a large tree before the padded playground surface was installed. The tree died as a result of the playground surface being installed. The tree was removed but the stump remains, now encased in the wooden box. During recess there are usually balls, jump ropes, and occasionally gear such as stilts and pogo sticks available to the elementary children.

The entire campus is utilized by all the age groups in the school. The basic philosophy of the space is that the landscape is there for children to investigate, to discover, and to create through their own paths and hiding places.

Research Design

Qualitative research methods were used to collect and analyze the details of children's interactions with natural objects and the environment. The primary research data was collected from January 2009 through June 2009. The data

was collected while the children were at recess and physical education each day for five months.

Fifty eight children from second through eighth grade formed the research group. There were a total of twenty two males and thirty six females.

Table 3.4 Research Participants Grade and Gender Distributions

	2nd & 3rd grades	4th&5th grades	6th grade	7th & 8th grades
Male	11	5	1	5
Female	19	9	5	3
Totals	30	14	6	8

The number of children in the research group was determined by returned completed parental permission and child assents. All forms were processed through the Institutional Review Board at The University of Montana. In addition to securing signed parental consents for all participating children, I secured verbal consent from children aged six through nine and a minor's consent, signed by the child, for children aged nine and over who participated in the research study.

In selecting and creating my research methodologies, my aim was to create rich descriptive accounts of the everyday events of recess and physical education at this school, including the setting and routine interactions. I chose four distinct and complementary modes for collecting data: (1) participant observations, (2) mapping, (3) structured group interviews, and (4) photographs.

I wanted to see the children's activities from different data points, to examine the research questions from many perspectives. I tried to focus on details through some methods and to examine the whole landscape with other methods. My aim was to describe the scene richly, to capture what was happening with the study participants and the environment. Using multiple methods such as these allowed for the use of triangulation, in which mixed methods of data sources are used to compare results. The themes and stories yielded create a layered web representing the daily desires, natural materials, and movements of children in nature.

Participant Observations I conducted participant observations during both recess and physical education classes. From mid-January through early May (for about four months total), I observed the second through eighth grade children during recess from an open second floor window. The recess children were in the natural area. I could hear some conversations, and I recorded their language in direct quotations as possible. I watched their movements and recorded what they chose to work with and do. I noted the places they went within the natural area and surrounding grounds. During the physical education classes, I was present with students outside, generally on the fitness trail. On some days, the children could pick their activities. On these days, I would observe and record their movements, what they chose to work with, and where they went.

My field notes are "an accumulated written record of [my] fieldwork experience" (Hay 2008, 282). They are made up of my on-site recordings

(including detailed descriptions of the setting and children's behaviors as well as direct quotations when possible) of children's interactions with elements of the outdoor setting as well as peers. For my on-site recordings, my goal was to capture verbal descriptions of the setting, students, and activities, as well as direct quotations or the substance of conversations. I documented everything I could take in, observing not only with vision but also by listening to the children's soundscapes. I consciously kept an eye for the typical and atypical—both the routine or expected in student activity and commentary, as well as the unanticipated. I relied on a small notebook and pen rather than mechanical recording devices. I listed date and time of my observation, class recess or gym level, weather, and any unusual details about the group or environment, then often jotted rough notes and later filled in observer commentary, as well as further details, relying on memory to recount some of the experiences.

According to Robin A. Kearns, the methodology of observation has three key functions for a researcher: for counting purposes (gathering numerical data to establish trends), for gathering complementary evidence (gathering additional descriptive information before, during or after other more structured means of gathering data to assist in interpreting that data), and for contextualizing (gathering additional descriptive information in order to develop a more in-depth interpretation of a particular time and place through direct experience of that time and place) (Hay 2008, 193). As my data section will show, my observations were useful, especially in the second and third senses. They allowed me to identify and describe details of the students' activities and thoughts.

During the period of observations, I acted as a participant observer, and my observer activities were known to the students. Sometimes, actually, my note-taking was of some interest to them. For example, I was once asked by my students what I was writing during a period of note-taking. I replied, “I am writing what I am observing.” Teacher observation and note-taking about the children and the environment is a common, necessary, encouraged, and valued practice in Montessori classrooms. Teachers strive to observe the students and the environment each day in Montessori classrooms. The data gathered is used for many purposes, from record keeping to better designing the classrooms to best suit the children and their interests. So, a teacher’s practice of recording observations is a familiar practice to the Montessori students.

Even though I often observed and took notes while gathering data, on the whole, I was enough of an insider to be able to disappear into the scenery. It seems my position at school has made for an ideal marriage with the participant observation method. My observer activities were compatible with my role as a participant—a Montessori teacher—in this setting. Adler and Adler call my role an “active membership role,” in which I was “involved in the setting’s central activities, assuming responsibilities that advance the group”, except that, in contrast to their definitions, I remained “fully committed” to my students’ values and goals while conducting observations (Merriam 2008, 101).

Mapping and “Special Place Statements” Mapping with children is a method used by many child nature researchers, including geographer Roger Hart. Constructing a map reveals how children view place, prompting them to

show visually how they interpret their space. Geographers frequently use the tool of mapping to engage participants in representing their landscapes as described by Hart (2007, 165-168):

> Mapping is also a method that children, including non-literate children, greatly enjoy using, as long as it is introduced in an unintimidating way with appropriate materials. The ability of a child to draw maps varies greatly according to their age and culture, but as long as you are accepting of very different styles and degrees of ability, most children over five will enjoy the activity. By mapping their use and evaluation of their daily environment, they can build a more ecological account of their world than if this information were collected by adults through an interview. Maps are a valuable means for allowing children and adults to express their individual preferences, dislikes, and ideas for places or parts of the environment and to compare and synthesize these with those of others to achieve a more collective expression.

In May of 2009, I conducted the mapping activity outside on the fitness trail. This activity took one-half hour for lower elementary students and a larger portion of the hour for the fourth through eight graders. I distributed 8x10 blank sheets of paper and asked the children to select a place outside, away from one another but close enough that they could hear me. (For one class only, I offered an example of a map with boundaries that delineated a framework and changed that for the remaining classes.)

To elicit student maps, I first introduced students to the concept of “special places” by generating one example of an area in the classroom that a student might identify as special, the book corner, and describing several possible reasons for calling this place special. I then asked students to identify outdoor special places with these instructions: “For this activity think about all the places we use outside at recess and for gym. Are any of these places special to you?

Do any of these places stand out as special because of what they are, and how they make you feel?"

To introduce the practice of mapping, I read to them the following text: "Please think of this piece of paper as a map, and on this map, draw a picture of your special place(s). Feel free to draw just one special place, or feel free to draw more than one." Students used one side of a blank 8x10 piece of paper to follow these instructions.

In addition, once children had constructed maps around their special places, I asked each to generate some "special place statements" using this question: "On the back of your map please name each of your special places from the front and describe why it is special. What do you like to do there? What makes the place special for you? How do you feel while you are there?"

The mapping and special-place statements activity produced an abundance of evidence of children's values. The children identified their special places and described their attachments to their places. The differences in descriptions between children who have recently arrived to our school and children who have been on campus for many years gives insights into time as a potentially significant factor in one's ability to connect with place.

Structured Group Interviews Structured group interviews were used with the intention of gathering data that was specific and individualized. As Linda McDowell writes, "interview methodologies typically aim for depth and detailed understanding rather than breadth and coverage" (DeLyser 2010, 158). I conducted these structured group interviews over two sessions for each age

grouping, one age grouping at a time, in a classroom set up with pens, paper, and lap boards. The structured interviews came after the mapping exercise in late May 2009.

For the structured interviews, I followed a predetermined and standardized list of questions that were asked the same way and in the same order. One reason I chose to interview as a data-gathering method is that interviews produce text generated straight from the informants, my students, in their own words. Also, as Kevin Dunn points out, interviews can be a method "that shows respect for and empowers those people who provide the data" (Hay 2008, 80). My students were free to express as much as they liked and elaborate as much as they liked during interviews, knowing that I wanted to know what they thought and felt, and that I valued their insights highly. Lastly, through interviews, I was expecting to capture the broad band of thinking within my student population. As Dunn goes on to say, interviews can help the researcher to "collect a diversity of meaning, opinion, and experiences. Interviews provide insights into the differing opinions or debates within a group, but they can also reveal consensus on some issues" (Hay 2008, 80).

Students were introduced to the interviews by me with these words:

> I would like to learn about how you feel about nature and the outdoors. I am going to ask you some questions about your experiences. Please write your answers on the piece of paper I have given you. I will give you the question number and read the question to you. I will repeat the question. Let me know if you need more time or if you need me to explain the question in a different way. Remember there are no wrong answers.

My interview questions were designed to elicit children's insights into and attitude about various natural objects and their activities in the school yard. Key questions were those such as these:

> Do you like to spend time outside? Why or why not?
> Do you like to explore outside? Why or why not?
> Would you say that you love nature? Why or why not?
> Is there something that you do not like about nature? If so, what is it?
> Would you say that you love the Earth? Why or why not?
> Do you think spending time outside has helped you love the Earth? Why or why not?
> How do you feel you are connected to nature and the Earth?
> What are your favorite nature objects at school?
> Would you say you love these objects? Why or why not?
> What do you like to play with from nature at school?
> What do you do with the natural things at school?

The structured interview method produced a great amount of data. The answers to the interview questions were typed into Excel and, using NVivo, I obtained a manifest content analysis—or a word frequency tally of the top one thousand key words (such as "love" and "Earth"). This method helped me to see and assess the visible, surface content of the interviews (Hay 2008, 100). From that list, I identified themes within the children's experiences. That is, the children's written words revealed patterns or themes within the data. Hay describes a theme as "an important process, commonality, characteristic or theory that emerges from the data and (that) can be used to analyze or abstract the data" (Hay 2008, 296). Themes were grouped and sub themes were then created to allow the children's words to speak for themselves. Researchers call this the process of latent content analysis (Hay 2008, 296). In an effort to check the emergent themes, words were linked and sentences containing only

those words together were printed. Answers from a handful of key questions were also clumped and reviewed. Lastly, these themes were reflected upon in light of the themes emerging from my field notes.

Photographs Photographs of the children outdoors were used to supplement my three primary means of data collection. On random days, during recess and physical education, I documented children's involvement in outdoor activities by taking photographs of various moments in which the children seemed to be about interesting work—whether that meant work that was highly entertaining to the children or interesting to the children. I also took photographs of various "special places," or different places the children like to go on campus. In addition to the places, I photographed the objects with which they worked. Over the five months, I attempted to capture at least one photo of every place and every object with which the children had contact. The resulting record of images, a visual record, captures experiences in a new dimension for this research project. While the photographs are used chiefly to support and illustrate findings from the primary research modes in this project, the visual record of the wide range of places, objects and interactions offers another layer of methods and data for interpreting children's experiences of the natural setting. All photos shown in this document were taken by me.

Research Questions

The primary research questions for this thesis are:

1) What are the key elements of the children's primary experiences in this outdoor space?

2) What natural elements and places in this environment do the children connect with? How and why? What do they love and why?

3) How do children characterize their connection to this environment? In essence, how do they describe their “geographilia”?

CHAPTER FOUR

Research Findings

Children Describe their Experiences of Geographilia

As I studied my plentiful data, I began to develop a clear and consistent impression of what the children in this study understood about their experiences with nature. First, a content analysis of the interviews led me to chart the children's most frequently occurring natural references. These charts are described below. Then, with these frequent references in mind, I was able to analyze the content of children's maps, special place statements, and field notes in order to discern why these particular natural items or elements were significant to the children. From the data, themes emerged. These themes are discussed in the second part of this chapter.

On the whole, much of the data points toward the key ideas of this chapter: the ways in which children in this study demonstrate openness to learning about nature and connection to the world they discover in the play yard. The children were led by the "prepared environment" of the play yard to investigate and express big ideas about the character of the outdoors and the quality of their interaction with the outdoors. For this population of students, with regularly scheduled and personally motivated interactions with the environment, connecting with their environment was practically a natural consequence. The children offer insights into various ways in which nature connects them to parts of their own lives, to parts of others' lives, and to the life of the planet itself.

Key Elements of the Children's Primary Experiences

The figures show the items the children referenced most during the interviews. Plants emerged as the largest category of reference and this category is further dissected to expand on what sort of plants in particular the children commented on, broken out as smaller herbaceous plants and larger woody plants. Trees are the most mentioned large woody plant. All the materials trees produce like sticks, leaves, and bark are contained on that list.

Table 4.1 Key Elements Referenced by Children in the Environment

Element	Number of times word used
Plants	534
Animals	192
Water	106
Rocks	83
Dirt	30

source: children's interviews.

It is not surprising plants were the most referenced natural element since they are widely accessible to the students and more socially acceptable to handle. Animals are of great interest but sometimes the children are discouraged from interacting with animals, especially mammals, and sometimes there is fear of insects and spiders. Water, rocks and dirt, although intriguing, can also be frowned upon due to the mess factor. Plants are safe in comparison to the other elements in the environment, so it seems children almost always can interact with them without issues or surprises. Plants can be interesting to children as they can use all their senses to explore them. Also, the fact that plants are living and changing on a daily basis draws the children's attention. An interesting subject for further research would be a study in a site in which the

use of water, rocks, and dirt were widely accepted and encouraged by most parents and teachers. Our school, although on the whole liberal in its acceptance of most elements, is still affected by a fairly large and individually diverse teacher and student population.

Table 4.2 Smaller Herbaceous Plant Breakdowns

Total Plants	534
Smaller Herbaceous Plants	276
including the following:	
Flowers	56
Fruit	40
Vegetables	31
Grass	25
Lemongrass (Yellow Wood Sorrel)	16
Berries	11
Oniongrass	11
Honeysuckle	16
Moss	10
Herbs	9
Ivy	8
Wild plants	8
Hay	5
Weeds	2

source: children's interviews.

Many of the individual plants named appeal to the senses. The children's senses of smell, taste, and touch were engaged by such plants as flowers, fruit, lemongrass, and honeysuckle. In my field notes, I referenced numerous times in which the children experienced excitement with some of these plants. It is the senses that elicit such excitement and anchor the experience in their memory.

Table 4.3 Larger Woody Plants and Resulting Materials Breakdowns

Total Plants		534
Woody Plants And Resulting Materials		258
Including the following:		
Trees	163	
Sticks	53	
Leaves	20	
Logs	8	
Bushes	5	
Cones	5	
Bark	4	

source: children's interviews.

Sticks were one of the most frequently used natural materials, according to the field notes. Over the nearly five months of observations, sticks were continually incorporated into the children's daily outdoor experiences and are a source of constant enjoyment. The sticks varied in sizes, from the smallest hand-held twig to the largest of heavy branches. The sticks were used in practically every imaginable way. The children were so drawn to the sticks, it is as if the sticks spoke to them. As one 5th grade boy summarizes in the interviews, "I like to play with sticks."

Figure 4.1 Children Building Stick Fort.

Connecting with Nature: Children Describe their Experiences of Geographilia

The content of the children's maps, the children's special place statements, and my field notes offer useful insight into how the children engaged the particular named natural elements. In many cases, the data also captures the significance of these elements through the children's words. I noted prominent themes in what the children expressed about their natural experiences—big ideas about nature itself and about their interaction with the outdoor world. These themes will be explored below.

I expected students to demonstrate some basic scientific understandings and to practice a variety of important physical skills in the outdoors. Beyond

these anticipated understandings, however, children demonstrated various ways in which nature acts as a connecting force: it connects them to parts of their own lives, to parts of others' lives, and to the life of the planet itself. These understandings suggest the emergence of the self in context of the whole.

Students take meaning from the changing landscape and discover their own place in natural cycles. The children are on the journey of learning that others share their spaces and that the shifting landscape is continuous. The children share stories of the land, the past, what was here before but now is gone, what is new, and they predict new days with new changes. Keenly aware, they take notice of changes, ask questions, and make suggestions. The children are experiencing the living planet, the movement on the surface, and seeing they are part of it all. They are developing attachments over time and taking ownership of place. The children are noticing their footprints on the land and how they can change nature through their actions. They test their theories and experiment with different actions. They are beginning to grasp that they can be part of the problems and solutions. Developing attachments over time, students are taking ownership of place.

Children Carefully Observe Nature at Work

"(I love) the trees and the garden near the (school) building because the trees provide oxygen and the garden is pretty." 5th grade girl, group interviews

Through their outdoor play, children use their senses to observe nature and engage in processes of scientific inquiry. They are developing powers of observation and using their senses to see how nature works in multiple ways. The observations occur over time through the seasonal changes during the

course of the year. The Earth cycles are experienced year after year, and children compare years and seasons. Life and death are evident all around them.

Trees Outside each day, the children experience the natural cycles of life and death first-hand. One enormous experience of this for the whole school community was the illness and ultimate death of the welcoming and much loved tree at the entrance of the school.

Because of its position at the entrance to school, this tree is visible to everyone who passes by each day. Over a period of time, adults and children alike could see that the tree was not well. Children noticed that many branches had no leaves. The tree was observed over time and then heavily pruned. The pruning resulted in a medusa look. Everyone waited to see if the pruning would help the tree regain its energy, and the children asked many questions. But the tree never sprouted any more leaves. The tree died. It is now called the dead tree.

Figure 4.2 The Dead Tree in Front of the Natural Area.

The head of school was wise to move slowly with the transition of the tree. People recall, both parents and staff, when they first saw the tree cut back hard into the medusa look and felt their hearts drop. They said it was a shock, it seemed so drastic, they were sad.

The dead tree still stands, and the children still play around it and with it. All the bark came off in the years after its death. The children used the slabs of bark as platters for their outdoor creations and siding for their fairy houses. As the bark aged, it became home to insects and the children would explore the

insect colonies. The children talk about the place of this tree in their lives, as shown in this reflection, from a fourth grade student: (My) special place (is the) dead tree (because it is) very calming and it has been there since I came to this school. 4th grade girl, mapping activity and special place statement

Beyond this dead tree, trees were the most mentioned plant in the children's interviews, referred to 163 times. Plants, including trees, were the most mentioned of natural objects in the interviews, referred to 534 times. Trees are admired and loved for so many reasons. The children mention the shade they provide, the leaves and buds, their beauty, the joy of climbing and getting a high-up view. The children also mention their connections to trees and memories of trees on campus as they grow older with the trees, as shown in this reflection, from an eighth grade student who has attended this school since kindergarten:

> That spot (at the stump enclosed by the wooden box on the playground) is special (to me) because when I was a kid, and I played in the playground, it always seemed like that tree always watched us. When it got cut down it was really depressing. 8th grade boy, mapping activity and special place statement

Figure 4.3 Wooden Box on Playground Where a Tree Once Stood.

Like the eighth grade boy, the children mention their sadness in the loss of a campus tree as if they have lost a friend, a constant companion in their mind. For the mapping and special place activity trees were chosen as a special place 41 times.

Such emotional connections made over time in daily spaces cement children to place. Children connect at an emotional and intellectual level, applying classroom understandings to actual hands-on experiences. They move about the campus and explore, leading their own way to learning. They own their scientific knowledge, using their knowledge freely as they connect with the natural world.

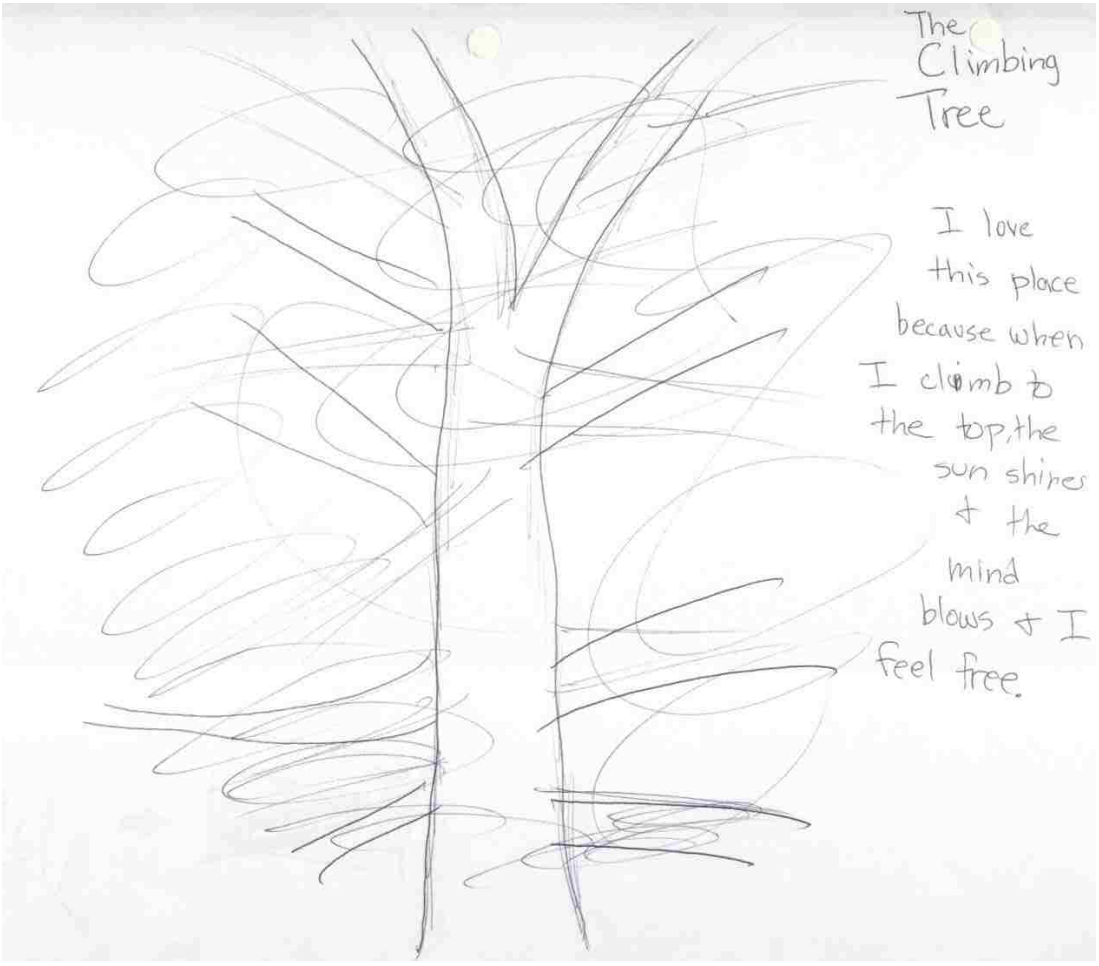

Figure 4.4 6th Grade Girl, Mapping Activity and Special Place Statement.

Climbing and the climbing tree are recurrent themes on campus. The children love to climb especially the holly tree on the fitness trail which they call the climbing tree. This tree was mapped as a special place by 26 children. Climbing was referred to 70 times in the interviews. The children enthusiastically proclaim their need to climb as illustrated in the following quotations:.

"I love to climb trees, I feel free when I am climbing one." 5th grade girl, group interviews "I love climbing, it's healthy!" 6th grade girl, group interviews

Snow Any sort of precipitation seems to thrill the children. Water and being wet is always a draw. Water was the third most mentioned natural element. Snow, infrequent and unpredictable, is especially welcome. In the months of November through April, there is the possibility of snow. (Snow is always a possibility, but there can be years where there is little or no snow.) Children's experience of snow illustrates the way they observe and connect to the rhythms of nature.

In the winter, the children will chat about the amount of snow or lack of compared to past years. They will try to remember how many days they went sledding at school last year. They will give attention to the week's weather and try to predict if the snow hills (the small hill at school and the big hill, in a city park, one-half mile from school) will melt by their gym day and time. They will see me at school and tell of their hopes that the snow will make it with this temperature and that sun exposure. They know the hills gets slushy and the sleds go slower as more sun shines on the hills and if the temperature warms as the day goes on.

The gym classes are in the afternoon so they know what they take note of in the morning could be different by the afternoon. Children will walk and drive past the park sled hill on their way to school and notice if the ground is frozen or snow covered. They will find me and report the status of the park hill and will note if they spotted mud due to wearing down from sleds and melting. They are observing the daily weather and predicting the hourly changes. They are driven and interested in observing the natural changes.

Even though there were no interview questions pertaining to snow, ice or sledding, the words snow and ice were referenced six times. During the participant observations, snow and ice activities were recorded many times in the field notes. The children at every level, even the middle school, reacted with great joy and anticipation when there was talk of snow arriving. In the field notes I recorded the children's behavior for a week of gym during snow. I wrote of the shouts of unleashed pleasure when children left the building into the snow. The children were careful to prepare with hats, mittens and snow pants. They knew if everyone was prepared ahead of time, there would be more time out in the snow. There were almost nonexistent complaints of the snow activities, including the run to and from the city park. "Most of the kids push themselves to run quickly, while each is carrying a sled, as to get the maximum time on the snow hill. The drive they exhibit, even adolescents, gives me hope that they still enjoy simple outdoor physical activities and are not yet beyond it." (February 14-22, 2009 field notes).

The emotional satisfaction the children get from going outside and playing in the snow is obvious. The weather outside is often sunny while brisk when snow arrives. The children appear energized, a notch higher. Free recess play leads to exploration of the snow using all the senses. The children love to eat the snow even though they know it contains bits of this and that. "They appear compelled to explore the snow through taste, resembling toddlers. They put their whole bodies down on the snow as to take it all in, the newly-changed Earth

Figure 4.5 Child Snowboarding During Physical Education Class.

surface." (February 14-22, 2009 field notes) Tactile explorations link them to winter nature.

Mud Dirt was the fifth most mentioned natural element. The fitness trail has a hard-packed dirt ground much of the year, but mud is often there since rain can happen almost any time. If the rain lasts for days, the mud can get so deep that your shoes can be sucked off.

The kids seem to love the mud, a natural material that invites them to get involved. Children will grab hands full of mud and squeeze it between their fingers. They will paint their bodies with the mud. Almost everyone has slid in the mud while playing. Mud is such a tactile, exciting element especially since it can create all sorts of reactions from adults. Adults tend to dislike the mud; the children want to become one with the mud.

On one particular day, we were lucky enough to have puddles of water with mud about the fitness trail. The children went right off to getting involved in mud matters. One third grade girl discovered the wonderful sounds of mud suctioned to her shoes as she pulled each foot up out of the mud. The girl is under the climbing tree at the mud puddle and shouts: “Check this out!” Another girl squeals. The girl says to other children: “You have to come here!” Still in the deep mud, she says: “It feels so good.” So in and out of the mud the shoes went with great joy and noise. She shared her discoveries with her friends and they joined in the fun. Another third grade girl says about her own shoes in the mud: “I can make a funny noise.” (February 2, 2009 field notes)

The mud gives the children an Earthy, tactile experience. They can feel the temperature and texture on their bodies. They can smell the wet Earth. In the interviews, mud and dirt were referenced 30 times. A second grade girl is quoted in the interviews saying: “My favorite outside sound is wet mud!!!” The same girl states: “I would like a mud pit! (at school).” Water was referenced 106 times in the interviews. The multi-sensorial immersion is embedded in this child’s memories and emotional experiences. While the practice of mud play can so

easily be criminalized and seen as messy by adults, as this girl shows, the value in experience outweighs negative inconveniences. The enthusiasm for mud and dirt is echoed by a 4th grade boy in the group interviews:

“I like to get dirty.”

Figure 4.6 Middle School Student Proudly Displaying Mud on Shirt.

Children Connect with Nature by Play

“I like to use sticks.” 3rd grade girl, group interviews

“I like tree bark.” 2nd grade girl, group interviews

“I collect monkey gold.” 2nd grade boy, group interviews

“I like to play with rocks.” 3rd grade boy, group interviews

“I love being outside for gym and recess.” 3rd grade girl, group interviews

“I like to play with the trees.” 3rd grade boy, group interviews

“I like to play with water.” 4th grade boy, group interviews

It was interesting that alongside students' scientific pursuit came a stretching of their imagination. Often children found a novel use for space and objects outside.

In our space, the children must adapt every activity in recess and physical education to nature, natural elements, the season, daily weather, and areas of irregular shapes. For example, if the children choose to play a game of kick ball, there is no clear, square field. The fitness trail is the most open area, but there are trees and small climbing structures in the area. The area often has muddy spots. The children adapt the game and the parameters of the game to meet the space. Not restricted by the lack of field space, children are creative in their ideas, problem solving, and group brainstorming skills. Slipping in the mud and getting wet and muddy is often part of the game. The children decide how to adapt the activities to suit their needs. All of these decisions have to be discussed and agreed upon before an activity begins. The children must decide to use their time to debate game rules or come to an agreement and play the game. Recess and physical education is a mix between structured games and individual activities. The children are instrumental in the choices. The children, through their daily activities get sweaty, hot, wet, cold, muddy, dirty, snow covered, and sometimes nearly frozen. Being outside unites them with the natural elements and immerses their bodies in the daily outdoor conditions.

Sticks Plants are the dominant theme and the resulting materials from plants play a dominant role in the children's outdoor play. This is supported in

the interview data and field note data. Sticks are the top woody plant materials mentioned and observed in the children's daily activities.

Figure 4.7 Child Digging with Stick in Dirt.

Our campus with its many trees is blessed with an endless supply of sticks and branches. We value the supply and the children readily attend to the newly fallen branch. Even an enormous limb downed by a storm will be swarmed by children like ants on sugar. To the children, it is a sweet pleasure to use and create with sticks.

Again, a full body experience is a tactile experience of choice if there is a newly arrived, larger-than-child-body-sized limb available. Children will put their whole bodies down on the limb, smell and feel the bark, examine the point of detachment from the tree and search for where the limb came from. The children will stand on the limb, often with friends, and bounce on the limb and rock it back

and forth. Then there are the industrious branch strippers who remove all of the smaller branches from the main limb. Moving the limb can take several children to organize and cooperate to find a new place for the large limb. Often the largest of limbs are set against large sturdy objects like trees, and carefully positioned and tested for sturdiness as a fort is constructed. Fort building can be a group or individual endeavor as some children choose to build alone creating their individual elaborate fort creations. Groups of children will often construct large forts together, finding loose natural materials to stuff in the cracks of the stick skeleton to make a private hiding place.

Such outdoor activity is child-directed, with adults rarely involved. The role of the teacher as observer takes the attention off the adult and puts it on the children. The children build and work with the natural materials because they find pleasure in the activity and enjoy outside time with friends or alone. The children create for the pure desire to do so, for the love of it. The children do not engage in the creations of their imaginations to please the adults in the environment. The child is the focus, and if they choose to engage another, it is typically a peer. If the children need help with a task, they ask friends. The adults in the environment will direct the children to ask a friend if adult assistance is requested. They resist ways in which children become “praise junkies,” engaging activities as adult-centered, reward-seeking children, no longer working for the pleasure of learning and discovery but for the words of adults saying “good job”, “wow, I (the adult) like what you (the child) made.” So, if asked by a child, “Do you like my fairy house I made of bark?” a teacher would

say, “Well, do you like it? Because that is what really matters, whether you like what you have created.” These are just some examples of consistent Montessori language that helps create smooth cooperative working situations among the children in the classroom and outside. There are far fewer victims as we are all responsible for our own behavior. We are all friends. We are kind and peaceful to each other and to the environment. We are respectful of others and other’s work.

These few examples spoken among adults and children in the culture of grace and courtesy occur from toddler to teen. It is this culture that allows for the free use of knives in the classroom (even at the primary level) without adult assistance for activities like vegetable cutting and serving. The culture promotes independence from unnecessary adult involvement, leading to self-sufficiency and self-control. We know the children are capable of these tasks and responsibilities and so they know that they must be capable. The culture of self control and self responsibility also reduces the tendency to blame others for mistakes. The culture allows for children to freely use sticks and branches in their outdoor environment while being safe and courteous. It takes much work on the part of the Montessori teachers to create a culture that works in this way. Much time and effort is given to facilitating situations positively that provide opportunities for practice and growth among our school community. It is helpful that we are a community, that the children are with each other year after year and with the same teachers for three or four year stretches. Through continuous practice and guidance, the children learn to manage themselves and each other.

It helps the teachers to have all the members of the community to help remind each other of what is expected. The Montessori environment and the behavioral norms allow for free exploration and use of materials that could, quite frankly, put your eye out. The framework of the Montessori environment minimizes safety problems, hurt feelings, victimhood, apathy, insecurity, bullying, and generally not peaceful and uncivilized behaviors.

Interestingly, many of these difficulties are attributed to the loss of free play in schools today, certainly outdoor free play. In a system heavy with authority and management, children and adults feel unworthy of many challenges. Opportunities to connect freely and creatively with nature don't exist in part because of educational systems that are typically setting children up to be incapable. Children who are unable to take care of themselves and the media-promoted restrictions on children that carry into the school environment, like unrealistic safety concerns, are two reasons children are spending less time outdoors—and schools are enabling this to happen.

The Montessori environment allows for a beautiful balance that sets children up to be children, while engaging their creativity in the free exploration of their natural environment, even with sticks. Children are encouraged to take care of themselves, each other, and the environment. Children as young as three years old have the capabilities to self-manage at a certain level.

Bark The children have access to large and small pieces of bark as it falls off trees and limbs. Bark is turned into platters on which berries and other creative salad-like displays are made. It is common to see beautiful

arrangements set upon bases of bark displayed in the school yard. The children recreate the lives they observe and experience. They take care to use plants that are abundant like grass, lemongrass (yellow wood sorrel), tree leaves, and onion grass. They reconstruct situations in which they are cooks or moms or other familiar people playing the parts of others in their lives. The creative play is often grounded in their real life experiences rather than that of media characters.

Figure 4.8 Fairy House Built of Found Bark.

In the field notes, I noted details central to the creative outdoor play. Real lessons are learned in a tactile, active way. Lessons learned while moving about are said to be anchored more deeply and acquired easier. Sitting is thought to be the worst position in which to learn. Free movement in the classroom and in the outdoor environment encourages multiple ways to acquire knowledge. Movement while learning engages active children and encourages less active individuals to move more.

One lesson noted while the children were making so-called salads on trays of bark was about a plant called milkweed. Milkweed in this area is a special plant that is native. People do not have the plant in their gardens often but rather see it on the road sides and open fields of this area. Citizens are encouraged to grow the plants in their own gardens as there appears to be less and less with the loss of open land. The pinkish purple flowers have a strong, sweet Hyacinth-like smell. Milkweed can grow quite tall sometimes, getting taller than five feet. The sturdy stalks and leaves exude a milky liquid. This plant is the food of the Monarch Butterfly Caterpillar.

While observing the children, I noticed they had taken one of the Milkweed plants and chopped it up and put it out on some bark slabs while creating what they called salad. I gently approached after listening to them converse for some time and shared with them that the Milkweed is a special plant since the caterpillars eat the leaves. I suggested that they consider avoiding the use of the Milkweed and perhaps choose a more common green plant for their next salad. They were very interested in the Milkweed and the caterpillars and went so far on their own to create a sign to label the Milkweed, writing on the sign “do not pick, food for caterpillars.” The value and depth of their own lesson and the empathy they displayed is impressive. They are learning through their own physical experiences outdoors. They are choosing natural elements like plants and bark in their play and connecting to nature in the process.

Figure 4.9 Children Making Salad with Milkweed Stalks on Bark.

Neither the children's inquiry nor their play seemed to diminish the other; rather, the broad character of the natural world seemed to evoke an expansive mode for working and playing there.

Children Become Stewards of Their Own Bodies, Selves, and One Another

Through their play, children develop real and necessary outdoor skills and they develop physical control over body and over impulses—self-control. Through their outdoor play, students learn interpersonal and social aspects of being together outside. Children become stewards of one another. They learn in a new space how to function in society—learning agreements for safety and care of each other.

The children discover the calming effects of nature and being outdoors. Many of the children expressed personal feelings in the statements included with

the mapping activity. They wrote how they felt peaceful outside or in a particular place outdoors in nature.

Over the observation period, the children demonstrated care and concern for themselves, others and the environment. Each day brings different weather and they must assess clothing needs for temperature changes. In the winter, they must take care not to freeze. They must be conscious of proper fabrics and layers of clothing. They have the choice to wear hats, gloves, and jackets. They are responsible for the care of their bodies. Many times, the children have offered gloves or other items to friends who are cold or uncomfortable. The children are urged to come prepared but personal experience is often the better teacher.

The children look out for each other and take care of each other. The children learn how to work out issues using new environments and modes. The outdoor space is also a “people who need space, get space” place. The children would often bring me sharp glass shards they would discover while digging or exploring the landscape. They would ask if I could take the glass piece or if they could go and put it in the trash.

When using sticks, the children work hard at carrying them carefully as not to poke others around them. They help remind each other to be careful while fort building and playing games with sticks. They enjoy carrying sticks everywhere and love to run with them. A spontaneous game of fencing was even played during a physical education session, and I was amazed at the care taken to be

safe. The children take great care in their work with sticks and are able to use them without harming each other.

Figure 4.10 3rd Grade Girl, Mapping Activity and Special Place Statement.

Climbing is a favorite activity of all ages. Children climb the trees, piled snow banks, mulch piles, and stacked hay bales. They have seen accidents happen on occasion and remind each other of safety. In autumn, we often have straw bales with which the children build forts and tunnels. They love the straw and eventually the bales are dismantled and an enormous straw pile exists for everyone to jump in and hide. The children look before jumping in the pile as not to land on another child. They review rules with each other like taking turns so there are no collisions from children jumping at the same time. They will remind each other of past injuries that have resulted from jumping at the same time.

Figure 4.11 Children Jumping in Straw Pile from Stacked Bales.

There are logs available for the children to use that are the size of fire wood. The children learn to lift the logs properly using their legs and squatting. The children will use the logs to mark areas when playing a game, to build with, and to just sit on. There is a log activity we do in physical education to practice balancing and working cooperatively as a group. The children must walk from one place to another stepping only on the logs. They help each other to cross from one log to the next, spotting each other, and lending a hand.

Figure 4.12 Child Jumping in Leaf Pile.

There are many opportunities to do real work in physical education. The students rake and pile leaves that fall from the trees and then play in the piles. They do the same when the straw is available. The children use rakes, large plastic trash cans, and sheets to collect and pile the leaves and straw. The children are amazed at how heavy the leaves and straw can be when dragging a sheet covered in a pile. They notice, too, that wet leaves and straw are much heavier than dry leaves and straw. The work they do with their bodies is invested in the large pile they create. Leaves and straw have also become insulation and stuffing in the cracks of forts and other hiding spots.

Figure 4.13 Children Discuss a Fort Construction Plan.

These children develop real and necessary outdoor skills with handling tools of nature—they understand things other kids don't. Children are figuring out appropriate and safe uses for materials, without us having to teach specific individual rules (about carrying sticks, for example). It's not that the environments and activities are themselves dangerous, and they don't promote dangerous behaviors. The Montessori environment provides the opportunity for child-centered, real life skills to be put into practice each day. This practice with real situations and tools allows for the growth of independent and competent people.

Children Identify How Nature Connects Them to Various Parts of Their Own Lives

"This place is special to me because it contains many of the memories of my childhood." 7th grade boy, mapping activity and special place statement

The emotional connection developed over time and the links to the past are evident in the children's place statements. The children see parts of nature and recall deep feelings connected to periods of their own lives. They feel many emotions like peacefulness, happiness, and sadness as the following quotation shows. "I like the Holly Tree because it is fun to climb and it is peaceful and quiet. When I am in this place I feel active. I like to climb the tree." 3rd grade girl, mapping activity and special place statement

As referenced in earlier lists, plants, animals, water, rocks and dirt were on the top 5 elements list as developed through word counts of the interview responses. Such elements can remain a constant over one's lifetime, and can even link one to her own lifetime as shared in this moving quotation:

> This tree is special to me because when I was younger I spent every day making mud balls and getting water secretly from the water fountain to make our concoctions. It makes me think about when I was younger and makes me happy. 8th grade girl, mapping activity and special place statement

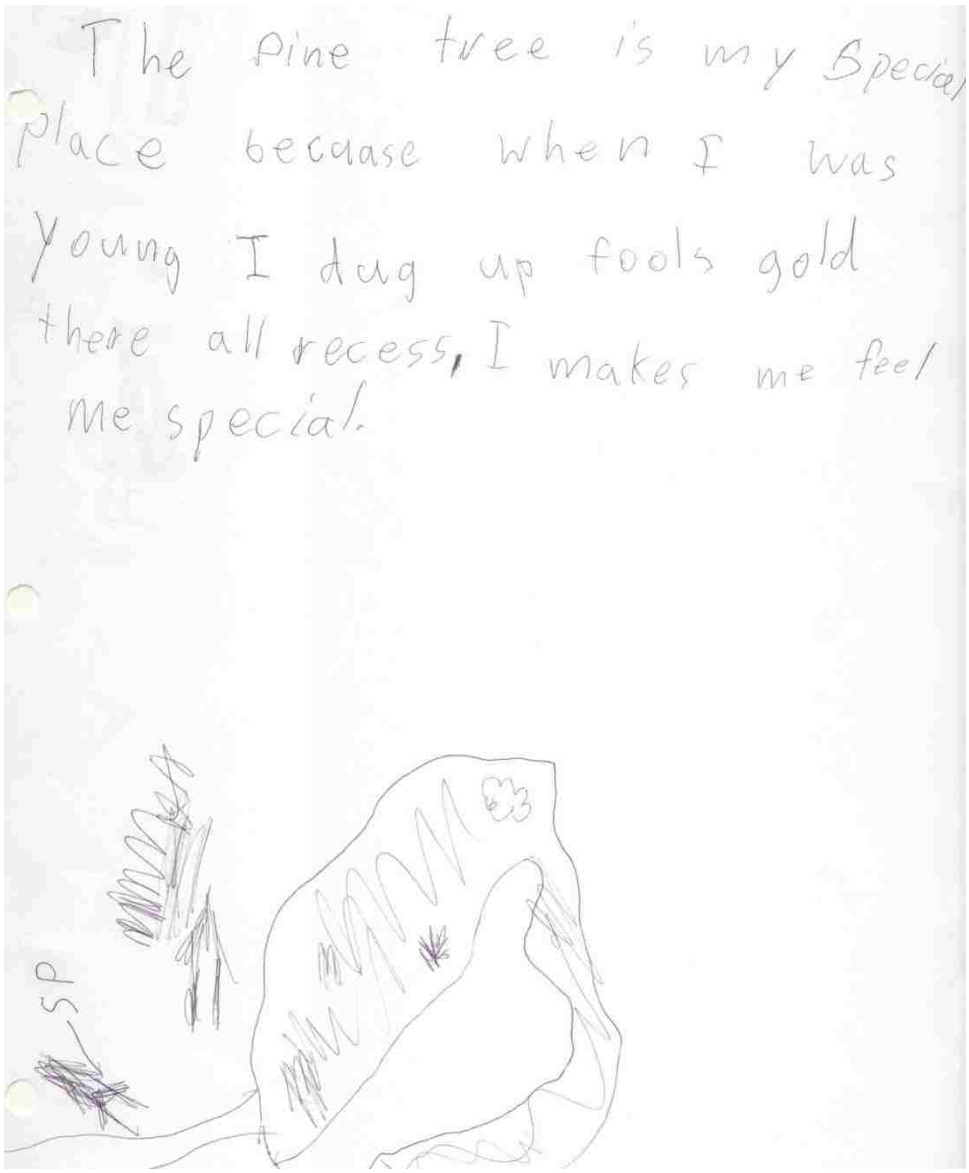

Figure 4.14 7th Grade Boy, Mapping Activity and Special Place Statement.

Children Connect People to Landscapes

As they play outdoors, children learn to make meaning from pieces of the landscape and recognize the role humans play in the state of nature. The children explore what is natural in outdoor cycles and what is humans intervening in nature. Children note pieces of the landscape and changes in the landscape

over time. The children are attuned to details adults might overlook and look for evidence of changed details in the environment. The following example shows this as recorded in the field notes on April 6, 2009. On a dark, rainy, and chilly day, the students are coming out of the school to line up for the carline, suddenly several children shout: "It's blooming! Look! It's blooming! The Magnolia tree, has flowers!" The children had noticed the Magnolia tree in bloom across the lot. It is not a large tree, and it was not right in front of them, but they still noticed and expressed great excitement in the changes in the landscape. During recess and physical education each year when the Magnolia blooms, the students love to pick the fallen petals off the ground and rub them on their cheeks to feel how soft they are. They smell the petals and examine them. Many of the children tuck the petals in their pockets, to keep for later or to show others in school or at home. Many of the small nature objects connect to the children in a way that they feel drawn to keep the items with them. They want to keep these special objects. By being with natural objects and keeping them, children are extending the bond beyond the initial contact outdoors. They are bringing nature inside too, into the buildings and into their hearts. As expressed in the following quotations, children believe they are part of nature.

"I am the Earth!" 8th grade boy, group interviews

"We are nature." 4th grade girl, group interviews

"We are all part of mother nature." 2nd grade girl, group interviews

"I feel I have a spiritual connection with the nature." 7th grade boy, group interviews

The children are searching for new views and perspectives of the landscape. They investigate hiding places to observe their place in secret. They seek the highest place to look out at the land. They feel themselves as part of the whole picture, as part of a tree and part of a bush. Their whole body is in the landscape, moving about, using their senses to experience each corner.

Figure 4.15 3rd Grade Girl, Mapping Activity and Special Place Statement.

Children See themselves as Stewards of Nature

"I like the animals outside and I like playing outside." 3rd grade boy, group interviews

Wildlife Animals were the second most mentioned element mentioned in the tallied interview data, second only to plants. The children express a strong interest in and affinity for the wildlife in this space and are always excited to come in contact with wild creatures. The term wildlife or animals here refers to all living creatures, not only mammals. The children were inclusive of all sorts of critters in their writing including ants, spiders, worms, and birds (to only mention a few). Their desire to connect to other living beings and protect them was most strongly observed in the field notes. I observed children who were hesitant to pick up an Earthworm, but after gentle encouragement and with direct contact, they are transformed into Earthworm rescuers, putting any they encounter in a safe spot.

Figure 4.16 Children Holding an Earthworm.

I witnessed the transformation from cautious and fearful wildlife handler to caretaker and protector so many times. My critter of choice was the house centipede because they are around often and are inside and outside the building. Most of the children have seen a house centipede and most are very cautious about handling them. They would watch me catch the centipede and then watch it crawl from one hand to the other. They can be quite quick at first until they settle down. I would tell the children to look into the centipede's eyes and watch

it clean each long antenna. Through this careful observation, children came to see that the critter is more like themselves than different. A sense of empathy for the centipede comes over them. Next they usually hold the critter and come to know it isn't going to hurt them. They then feel connected to the centipedes and whenever they find one in the school, they insist on putting him outside or in a safe place. This scenario was repeated whenever the opportunity arrived.

This is a simple activity anyone can do. The person introducing the critter must be gentle and confident, but at the same time able to read the recipient without pushing too hard. Gentle encouragement is key, as is focusing the gaze of the recipient on the eyes of the critter--showing the recipient the characteristics of the critter that they can see in themselves, like washing. I find this to be one connecting activity that is worth the adult involvement initially so the recipient or learner can bridge the gap of fear.

Once the fear is diminished with certain critters, especially insects and spiders, the learners are more likely to explore other critters on their own with confidence. The free exploration is still the same and still holds great value as opposed to always encountering critters in tanks or caged artificial habitats.

Animals hold a special place in the lives of the children as is shown through the children's writings.

"I like the sound of the cricket cricketing." 2nd grade boy, group interviews

"I like the sound of the birds." 3rd grade girl, group interviews

"I like to touch moss and water, I also like touching animals." 5th grade girl, group interviews

“I love worms.” 5th grade girl, group interviews

“I like to touch animals especially baby rabbits.” 4th grade girl, group interviews

“I like to watch animals.” 2nd grade girl, group interviews

Through their outdoor play, students learn to see consequences for their actions and take responsibility for actions outside. The students feel they are stewards of nature. This is illustrated in their actions. They often pick up pieces of trash and throw it away. They will save worms from puddles and walk around ants on the sidewalk. They are thrilled to observe the wildlife in our small campus oasis. They are protective of their space and feel compelled to care for it. Their sense of care and responsibility is shown again in their writings. “I am connected because I do not harm the environment.” 5th grade girl, group interviews

CHAPTER FIVE

Conclusions and Recommendations

"I live to be outside." 6th grade boy, group interviews

The data gathered here suggests that unstructured outdoor time serves young people well, supporting the growth of the "whole child" in many significant ways and helping the child to meet many rich, fundamental goals expressed for them by parents and teachers. Continued study of children's experiences of the outdoors can lead us to know more about the types of outdoor activities that children are drawn to and the outdoor roles in which these activities prompt children's long-term growth. Further investigations are needed into the lifelong human insights gained through early outdoor free play in natural areas. Such research can lead to even richer understandings of the development of positive Earth connections in humans and the force these play as people choose sustainable lifestyle choices.

In reflecting on the research methodology for this study, I see some true benefit to having studied such a broad age-range of children (second grade through eighth grade). It is interesting and useful to know that geographilia seems to emerge in children in similar ways and with similar results regardless of age. Still, it was clear that the older children in this study—and more specifically, those who have spent the most time in this Montessori schoolyard over the years—showed the strongest attachments to the outdoor space. They speak most deeply about the role that the outdoors plays in how they view themselves and the Earth. In some ways, this conclusion may be a result of the natural

process of children's identity development and growth in verbal expression. But the data also seems to suggest that the richest relations a child can have with the Earth are those that are nurtured and sustained over extended time and experiences with the outdoors. A child who grows with the outdoors may grow to more deeply love the outdoors. Further study of this idea of "more time, over time" can determine the relation between duration of time spent outdoors and strength of one's attachment to natural spaces and the Earth.

Another observation of my research design concerns the dual settings of this study—the children's independent, unstructured recess and their modestly supervised physical education classes. While studying both of these settings was sensible for this study, given my dual role in the school, I cannot say that examining both really added significant value to this study. I did not discern the extent to which children's activity and roles in one curricular period differed from that in the other or added new information to the project. It is worth noting that both settings seemed to present consistent data for the project, but in terms of managing and analyzing data more systematically, a researcher in a follow-up study could narrow her project to one setting.

Most of all, in terms of my research design and findings, perhaps the most compelling aspect was the research setting of the Montessori school. Freedom and unstructured, child-chosen discovery appear to create the most natural of connections. Supportive, positive, yet not overbearing adult involvement leads the child to make her or his own discoveries based upon true interest. Adults who provide emotional and physical space to children in home and school

environments, along with gentle child-centered guidance, have more positive outcomes. Lifelong skills of self sufficiency, confidence, care of others, and the environment are nurtured through experiences compatible with Montessori experiences. The Montessori classroom lessons are extended into the outdoor experiences, and connections to place and the Earth are valued and deepened at each level of schooling. I suggest that research in the field of geographilia in children can be strengthened by studying the Montessori philosophy.

Insights gained through my research yield in-depth information about the natural objects and materials the children choose to work with and the ways they work with these items. The words used by the children to describe how they value outdoor time at school and the evident connections lead to some recommendations for how a school's outdoor campus can be designed and maintained. The recommendations are reasonably attainable. The children recommend that certain natural items be available in their environment, such as sticks and leaves. These are readily supplied as they appear naturally from the trees, and we do not always have them taken away or cleaned up. We can introduce more frequently mentioned natural items such as rocks, boulders, and a water source, and we can construct such items as a rope swing and a dirt pile. These are just a few recommendations for how this research can help school staff—my own school staff, but school staffs practically anywhere—to enhance their outdoor access and programs for students in terms that are simple, safe, and inexpensive.

It also seems that to really nurture our children's experiences of the outdoors, barriers between outside and inside spaces need to shift. When children become attached to outdoor objects, they want to be with them—to study them, and to reflect on them. Rocks come inside, mud comes inside, leaves come inside, sticks come inside. Do we use doors in schools in the best possible way? Do we too easily separate inside and outside? What gets lost when we do that? How much of our practical school agreements about how to use space stand to change if we intend to really follow a child as she explores outside connections in her mind?

Continued dialogue with staff and faculty about the importance of the child's outdoor work can be highlighted at times throughout the year, especially at those times when going outside for recess is uncomfortable or coming back in is messy. This communication can serve as a reminder to staff to support the children's need for freedom and to value the outdoor experiences as helping their indoors curriculum. We need to talk about the value of working with mud and snow! We need to talk about climbing and digging!

This dialogue is not easy. Even as a teacher eager to take these lessons to heart, I see the complications this poses in a school setting. School staff will disagree about the extent to which allowing children such outdoor experiences is practical or possible for the school day, even if these adults can easily agree with the value of helping children connect to the outdoors. Even in our Montessori school, such disagreements occur. Also, parents and faculty—again, even those who may agree with the basic value of helping children connect to the outdoors—

will disagree over the extent to which such outdoor experiences in school are practical or possible, or even appropriate in a school setting. Even adults who are well-intended to outdoor education get anxious about how and when to best offer these experiences to children

The good news is that acquiring knowledge of how humans are impacted by the outdoor environment and how humans change nature and the Earth is required in most educational settings. The question that guides this work best is this: are the best interests of the children being considered and served first? Clearly, it is in our children's best interests to be involved in protecting the planet. Out of necessity, we work to make a national—make that a global—transition to a more sustainable world, and schools are helping young people to engage in conversations about important trends and issues in population, the global economy and resources, food and agriculture, the environment and climate, energy use and production, and transportation. What can you and I do about that? We ask each other. Often important data and recommendations for sustainability come from the same fields as those contributing to a holistic approach to helping children engage with the Earth—geography, planning, environmental studies, education, anthropology, sociology, child health, and psychology (to name only several). And we know that we need to solve problems across generations as we look to pioneering entrepreneurs, consumers, organizations, and governments to take steps to create the Earth's first "sustainable" global economy (http://www.worldwatch.org [accessed May 5, 2010]).

More than one hundred years after these words were spoken by Maria Montessori (1967, 67-74), they seem so relevant:

> The strength of even small children is more than we imagine, but it must have free play in order to reveal itself. When children come into contact with nature, they reveal their strength. Like everything else, a feeling for nature grows with exercise. Education in school can fix the attention of a child on special objects which will show exactly how far he has been able to stir up within himself a feeling for nature or will arouse within him latent or lost sentiments. A child, who more than anyone else is a spontaneous observer of nature, certainly needs to have at his disposal material upon which he can work. They find their greatest pleasure in acting, in knowing, in exploring, even apart from the attraction of external beauty. To have difficult enterprises bring satisfaction to the animating spirit which prompts a child to make its way in the world, sifting earth or heaping up big piles of branches from a tree. A child needs to live naturally and not simply have knowledge of nature. The most important thing to do is to free the child.

My research suggests that children are, indeed, the passionate observers and caretakers and problem-solvers that Montessori observes. Their work outside points us toward solutions to complicated problems, solutions that might appear simple in this increasingly complex and distracted world. The love of nature can be nurtured with small space, little education, little maintenance, and nearly no monetary expense. Natural areas are everywhere, as even cracks in a sidewalk reveal a world of nature—a hidden world with special gifts of natural objects. With all their senses, children discover and cherish the secrets of the Earth in childhood. Echoing the words of so many, one seventh grade girl tells me, “I love to play in the open.” That love leads these children to powerful ideas and powerful actions. A sixth grader says, “I love (nature) because we wouldn’t be here if it wasn’t around.” Another sixth grader announces, “When I explore I feel like there are no boundaries.” A fourth grade girl writes, “I feel like I am part of the world.” A third grade girl writes, “I love the Earth”. Geographilia, one’s love

for the Earth, is nurtured through the opportunity to understand the value nature plays in life, to see humans as part of the whole, and to take responsibility for that whole.

APPENDIX A: Mapping and Special Place Statement Script

We all have places that are special to us. There might be places that are special to you in your classroom, for example. These places may be on the rug, in the book corner, or in the snack area. The book corner may be special to you because you love to read and can spread out on the floor. You might like this area because it is quiet and the pillows are soft. Being there makes you feel good—maybe you feel relaxed and peaceful, or curious about what you are reading about, or happy about knowing how to read and reading. This is an example of why you may think about the book corner as a special place.

For this activity think about all the places we use outside at recess and for gym. Are any of these places special to you? Do any of these places stand out as special because of what they are, and how they make you feel?

Please think of this piece of paper as a map, and on this map, draw a picture of your special place(s). Feel free to draw just one special place, or feel free to draw more than one.

On the back of your map please name each of your special places from the front and describe why it is special. What do you like to do there? What makes the place special for you? How do you feel while you are there?

APPENDIX B: Structured Group Interview Script

I would like to learn about how you feel about nature and the outdoors. I am going to ask you some questions about your experiences. Please write your answers on the piece of paper I have given you. I will give you the question number and read the question to you. I will repeat the question. Let me know if you need more time or if you need me to explain the question in a different way. Remember there are no wrong answers.

APPENDIX C: Structured Group Interview Questions

1. Do you like to explore outside? Why or why not? What do you do?
2. Do you have any special natural things you like to touch outdoors? What are they?
3. Do you have any favorite smells outdoors? What are they?
4. What outside nature sounds do you like the best?
5. Are there any favorite tastes you have outside?
6. What things in nature do you like to look at the most? Why?
7. Do you feel you are part of nature or separate from it? Can you explain why?
8. Do you collect special natural objects? Why or why not? What objects?
9. Is there anything you would like to tell me about your special objects?
10. Would you say you love these objects? Why or why not?
11. Would you say you love nature? Why or why not?
12. Is there something you do not like about nature? If so what is it?
13. Would you say you love the Earth? Why or why not?
14. Do you think spending time outside has helped you love the Earth? Why or why not?
15. What do you love the most about nature, the outdoors or the Earth?
16. Is there anything else you would like to share about nature, the outdoors or the Earth?
17. How do you feel you are connected to nature and the Earth?
18. Do you like having recess and gym outside at school? Why or why not?
19. If lessons could be taught outside would you like it? Why or why not?
20. If you could do your work outside would you like it? Why or why not?
21. Do you feel you need more time outside each day while at school or at home? Why or why not?
22. What are your favorite nature objects at school?
23. Would you say you love these objects? Why or why not?
24. What do you like to play with from nature at school?
25. What do you do with the natural things at school?
26. What natural items would you like to see at school that we do not have?
27. What do you think is important about the natural environment at our school?
28. Are there any kinds of natural activities you would like to see at school that we do not do?
29. Would you like to work in a garden at school?
30. What would you like to grow?
31. Would you like to climb the trees at school?

32. Is there anything else you would like to share about the school outside environment?
33. Do you like to spend time outside? Why or why not?
34. Do you like to spend time alone outside? Why or why not? What do you do alone?
35. Do you spend time with your friends or family outside? Doing what activities?
36. Have you ever been camping in a tent? Did you like it? What did you like the most about camping? What did you not like?
37. Do you like to work outside in the garden? Why or why not?
38. Do you like to climb trees? Why or why not?
39. Do you feel being outside is healthy for people? Why or why not?
40. Do you believe it is important to know about different things outdoors in nature? Why or why not?

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