Assessing the Divide between Humans and the Natural World: Effects of Increased Experience in Natural Areas

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School of Outdoor Recreation, Parks & Tourism

Lakehead University, Thunder Bay, Ontario

By Nicholas Schwass

Thesis Supervisor:

Dr. Tom Potter

Committee Member:

Dr. R. Harvey Lemelin

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ABSTRACT

There is speculation as to whether humans are able to comprehend, appreciate, and protect natural environments when they have received minimal or no exposure to such areas. There are many speculative explanations for this bifurcation between humans and nature; however, there is an absence of a solution to address the issue. Current research strongly emphasizes the health benefits of receiving more exposure to nature, especially since much of North America has witnessed a dramatic shift towards a more technologically driven culture that is heavily reliant on the urban environment.

This study investigates the declining connections between humans and the natural world, and the effect nature-based experience has on individual perspectives regarding stewardship and environmental awareness. Utilizing qualitative research methods, interviews were conducted with nine participants of three different Outward Bound Canada expeditions in order to determine whether a trip of one week or longer had influenced participants' sense of stewardship and/or environmental connectivity.

Results demonstrate a positive correlation between participant exposures to isolated natural environments and an increased sense of environmental commitment or stewardship, especially with regard to forming connections with nature, willingness to participate in environmental-based volunteer initiatives, and mitigating fear of the outdoors.

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CHAPTER 1

Introduction

Humans demonstrate a propensity to become attached to places where they have frequented, grown up, or have expended valuable time (Hidalgo & Hernandez, 2001). People can cultivate a sense of attachment to a dramatic range of locations, such as a place or area, whether it is urban, rural, or an indoor or outdoor environment (Hunt & Johns, 2013). In relation to the outdoor environment, there is currently endemic concern amongst park authorities and environmentalists regarding the reduced number of humans who visit or inhabit areas that are oriented in, or around nature (Canadian Parks Council, 2014; Manning, 2011). Researchers, environmentalists and the various agencies involved with the governance of natural areas, most pervasively within developed nations, have deliberated increased concern regarding the implications that can be associated with a lack of nature-based participation, and the effect it has, and will continue to have on human social behaviours and natural environments (Canadian Parks Council, 2014; Chawla, 1988; Kellert, 1998; Moore & Cosco, 2000; Selhub & Logan, 2014; Sobel, 1995; White, 2004; White, Virden, Riper, & Van, 2008).

There is conjecture as to whether humans are able to comprehend, appreciate, and protect natural environments to an acceptable degree, when they have received minimal or no exposure to such areas (Chawla, 1988; Kellert, 1998). There are many speculative explanations for this bifurcation between humans and nature; however, there is an absence of a wide-ranging solution to address the issue (Odum, 1982). In developed nations, the primary approach utilized to address environmental issues and concerns has typically been directed at educating people with regard to the types of activities and actions that degrade the environment, and establishing long-

term development goals to accommodate sustainability (Hesselbjerg, Christensen, Carter, & Giorgi 2002; Van Matre, 1990). Infrequently will environmental impact mitigation strategies involve directly exposing humans to rural or natural environments, with the intention of creating an advanced level of environmental connectedness. This lack of exposure is in part a result of the complexity of environmental issues, where the term "environment" can encapsulate the earth as a whole, and the multifaceted endless interactions occurring within it (Birnie & Boyle, 1994).

One of the fundamental principles this thesis is based upon is the essential preservation of natural areas, as they are a universal and critical component to life on planet earth (Daily, 2012; Jansson, Levin, Lubchenco, Mäler, Simpson, Starrett & Walker, 2000). As environmental concern escalates globally, the prominence of urban living has proliferated (Grimm, Faeth, Golubiewski, Redman, Wu, Bai, & Briggs, 2008; Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franěk, 2005). According to Grimm et al. (2008), the popularity and ubiquity of urban expansion is expected to continue, in fact "more than 95% of the net increase in the global population will be in cities of the developing world, which will approach the 80% urbanization level of most industrialized nations today" (p. 2). This rate of urbanization is creating an advanced level of distress amongst many environmentalists, since this can further exacerbate the divide between humans and natural environments (Chui, 2007). As humans become more detached from the natural world, people tend to establish erroneous perspectives of dependence, security, and the significance of nature, often neglecting to recognize the innate relationship humans have developed through evolving within natural areas, and how rural and wilderness areas serve as a life support system to all of earth's inhabitants (Daily, 2012; Van Matre, 1990).

Another critical theme embedded throughout the research in this thesis, pertains to the impact natural areas can have on human psychology, and how these impacts can affect various

aspects of human life/society. The background literature that was reviewed for this thesis (located in Chapter 2) examines the declining connections between humans and the natural world and the plentiful benefits humans procure when exposed to natural areas. The research is addressed through the lens of ecopsychology, utilizing qualitative research methods, which are directed towards analyzing changes in perspectives of environmental stewardship, after participants engage in an organized wilderness expedition. The field of Ecopsychology "recognizes that a capacity to live in balance with nature is essential to human emotional and spiritual well-being, a view that is consistent with the healing traditions of Indigenous peoples past and present, but lacking in present-day Western psychological theory" (Roszak, Gomes, & Kanner, 1995, p. 2)

The research conducted for this study investigates the effect of nature-based experiences can have on individuals' perspectives regarding stewardship and environmental awareness. As such, it seeks to answer the following research question:

Does experience in nature foster a sense of environmental stewardship and connection to nature?

CHAPTER 2

Literature Review

Over the past twenty years, the benefits associated with human exposure to nature have become ubiquitous throughout educational, psychological, and nature-based literature (Bowler, Buyung-Ali, Knight, & Pullin, 2010; Kaplan, 1995). Current research strongly emphasizes the health benefits of receiving more exposure to nature, especially since much of North America has witnessed a dramatic shift towards a technologically driven culture that is heavily reliant on the urban environment (Porter & Kakabadse, 2006; Rees & Wackernagel, 2008). For many people, the natural world has become a separate reality entirely, creating a rapidly increasing disconnect between humans and nature (Kareiva, 2008; Louv, 2014).

This literature review identifies the benefits associated with nature exposure, the cause and effect of nature deficit, the associated terminology, and provides a discussion with regard to the known benefits natural areas receive with an increased level of environmental awareness. In addition, the research outlined in this literature review, recognizes studies that have fixated on identifying the various connections that humans engender with the natural environment, through experience and exposure within nature.

The terms: nature, wilderness, natural areas, and stewardship are used pervasively throughout this thesis. The delineations provided (below) embody how these terms are represented throughout this thesis.

The term “environmental connectedness” is used fairly prevalently throughout this thesis, however it is important to note the subjectivity associated with this phrase. “Connectedness with nature (CN) is seen as a personal disposition relevant for environmental as well as human health”

(Cervinka, Röderer, & Hefler, 2011, p. 50). Since "connectedness" can be interpreted differently between individuals, there is fluidity in its delineations, and is therefore not represented as a concrete term throughout this thesis.

The Nature of Wilderness

Several terms with contentious delineations are represented throughout this literature; as a result, the following definitions were provided as a contextual foundation. Nature is a term that is frequently used loosely, as it fits within a broad spectrum of definitions. Nature is often understood as, "the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations" (Oxford Dictionaries, 2014). Defining nature creates contention, as many argue that humans are merely another component of nature, and as a result, human creations should be included in the definition (Ponting, 1991). However, throughout this thesis, the aforementioned definition of nature will be standard, unless otherwise stated. The reason anthropogenic creations have been excluded in the delineation of nature, in this thesis, is because nature and urban/built environments are contrasted throughout this literature/research. By separating the two, there is less confusion regarding what constitutes "nature".

There is even more disputation in the delineation of the term "wilderness". For example, a natural area can generally be included within the criteria of "wilderness", if it is a place that is mostly biologically intact, or it is a place that is legally protected to ensure it remains wild and absent of industrial infrastructure. These areas are usually open to traditional Indigenous use, or low impact recreation activities (The Wild Foundation, 2014).

Stewardship is a fundamental subject throughout this thesis. Stewardship is a term commonly used in environmental literature which can be defined as, "Conserving, restoring and enhancing ecological and cultural resources and maintaining biological diversity in representative, significant, and formally protected areas of land and water" (Canadian Parks Council, 2014, p. 34).

Throughout this thesis, the term "natural areas" has been used to represent regions that accommodate the criteria of: nature, wilderness, parks/protected areas, or conservation land.

Nature Deficit

Many North American cultures once shared a closer relationship with various natural environments for economic (natural resources), agricultural, spiritual and recreational purposes (Wilson, 1991). Along with technological advancements in North America, such as the introduction of synthetic pesticides, herbicides, and fertilizers, there were economic and cultural shifts; diverging away from small family farms, towards considerably larger agri-businesses (Statistics Canada, 2006; Williams & Karen, 1985). This integrated approach to agriculture required fewer people to cultivate the same quantity of land, which reduced the percentage of persons involved in agriculture (Evenson & Gollin, 2003). Agriculture is complex, as it involves a wealth of knowledge regarding natural patterns and systems; agriculturalists must maintain close relationships/awareness with the land in order for operations to be sustainable and efficient (Werner & Newton, 2005). Presently, in North America, fewer people are involved in agriculture, and as a partial result, society's connection with nature is dissipating to the degree that many urbanites have very little understanding of where their food comes from (Kareiva,

2008; Louv, 2014; Statistics Canada, 2006). According to a Statistics Canada census (2006), “In less than one lifetime Canada has moved from 1 in 3 Canadians living on a farm to 1 in 46. At the same time, Canada's total population tripled from 10, 363, 240 in 1931 to 31, 511, 590 in 2006” (p. 1).

Many studies have been conducted to isolate the variables concerning the decline in the numbers of people utilizing outdoor recreation areas (Pergams & Zaradic, 2008). The decline in use of natural areas has been attributed to evolving social behaviours, status of group dynamics, race and ethnicity, sex and gender, socioeconomic differences, and widespread technological shifts (Manning, 2011). Of the methods used to measure these factors, many have received scrutiny, as they are primarily based on specific study areas and populations, which are not necessarily representative of entire populations (Manning, 2011). However, the data collection methods utilized in these studies has been fairly diverse. The monitoring methods employed in several popular studies, measuring use patterns of parks, include: mechanical and electronic counting devices, optical scanners and cameras, direct and indirect observation, self - administered personal interviews, telephone, mail, and internet surveys, which have all assisted researchers in reaching the overarching conclusion that natural park visitation has decreased (Manning, 2011).

In Canada, cultural heritage and ethnic origins have been shown to be a prominent contributing factor regarding the divide between humans and natural areas (Kareiva, 2008; Manning, 2011; Pergams et al., 2008). According to a 2006 census, 1 in 5 Canadians are foreign born; as such, Canada has the second highest immigrant population globally (Chui, 2007). Different cultures interpret, utilize, romanticise, and respect wilderness areas differently, which has generated concern amongst representatives from the Canadian Parks Council (Canadian

Parks Council, 2014). It has been hypothesized by Bowker, Murphy, Cordell, English, Bergstrom, Starbuck, Betz, & Green, (2006) in their study titled *Wilderness and Primitive Area Recreation Participation and Consumption: An examination of Demographic and Spatial Factors,* that the aforementioned decline in the number of people visiting natural areas, will continue in Canada, as populations become increasingly ethnically diverse. This is merely one of the many influential factors that have largely contributed to the increasing divide between humans and nature.

Research has indicated a prominent decrease in the instance of visitation to natural parks or other types of natural areas (Kareiva, 2008; Manning, 2011; Pergams et al., 2008). This decline has been partially attributed to a dramatic rise in participation in electronic entertainment media including: television, movies, video games, and Internet use (Louv, 2014; Manning, 2014). Various researchers have developed phrases and terms to encapsulate this sedentary lifestyle, such as; "Nature Deficit disorder" "Videophilia" and "Extinction of experience" (Louv 2014; Pergams et al., 2006). Richard Louv coined the term "Nature Deficit Disorder" in his publication *Last Child in the Woods* (2008), as a non-medical term to encapsulate the cognitive, behavioural and social issues that have been generated as a result of a deficiency in human nature-based exposure.

Louv additionally emphasizes that cityscapes fabricate stressful overwhelming stimuli, which exacerbate depression, negative behaviours, and other cognitive and behavioural issues, such as Attention Deficit Hyperactivity Disorder (ADHD) (Louv, 2014; McCann & Ewing, 2003). Numerous studies have identified the conspicuous connection between mental illness and urban living; depression, anxiety, and schizophrenia are among the most common illnesses on the rise in cities (Lederbogen, Kirsch, Haddad, Streit, Tost, Schuch, & Meyer-Lindenberg, 2011).

Rates of mental illness have proliferated as global populations select to reside in cities (Lewis & Booth, 1994; Selhub et al., 2014). It is expected that in the next several decades, 90% of North Americans and 70% of people globally will reside in urban centres (Selhub et al., 2014). In addition to the various levels of angst, urbanization has also been shown to drive deforestation, and increase the amount of nutrient processed foods that people consume, which is similarly linked with depression (Sánchez-Villegas, Toledo, de Irala, Ruiz-Canela, Pla-Vidal, & Martínez-González, 2012).

Many North Americans today are not able to name the species present in the regions nearby their homes, and many may not know they even exist (Louv, 2014). Stephen Kellert, professor of social ecology at Yale, has discussed how experience in the surrounding home territory, especially in nearby nature, assists in shaping children's cognitive maturation, including the developed abilities to analyze, synthesize, and evaluate (Kellert, 1998). He further explains that developing the ability to establish these elements of cognitive maturation is one of the most challenging aspects of childhood. Kellert claims that exposure to nature is the most prominent aspect in a child's life that will offer consistent but varied chances for critical thinking and problem solving (Kellert, 1998). Similarly, a Japanese study conducted by Taniguchi & Akamatsu (2011) examined farming experiences and attitudes amongst children, regarding the cultivation of locally grown foods. The results demonstrated that the children, who had received the most agricultural exposure, maintained the most awareness and regard for locally grown food, as well as possessed the strongest attachment towards their local region (Taniguchi & Akamatsu, 2011). Furthermore, a similar study by Chipeniuk (1995) revealed that childhood foraging, as with agriculture, vastly foreshadows knowledge and concern for biodiversity later in life.

Additionally, according to a document entitled *Connecting Canadians with Nature* by the Canadian Parks Council (2014), nature is essential for child development and the nurturing of happy and healthy adults. The document elaborates on how Canadian children are receiving significantly less time in natural areas compared with the past. This shift is attributed to an increased focus on early literacy and numeracy, which has pushed children towards indoor activities and structured environments. Furthermore, "An emphasis on safety has led to the reduction of outdoor free play, the elimination of outings, and the displacement of natural playgrounds by commercial play structures" (Canadian Parks Council, 2014, p. 18). The same document elucidates that children who play in natural environments often demonstrate resilience, discipline, and develop skills for dealing with stress in the future (Canadian Parks Council, 2014). Additionally, nature-based play increases creativity and serves as an ideal environment for children to learn, play, and exercise simultaneously, without needing to even consider that those processes are occurring (Louv, 2014).

Similarly, Canada's National Parks agency, Parks Canada, in a document titled *Minister's Round Table on Parks Canada 2012: Summary Report,* stated,

> The lives of youth are increasingly urban, technology-driven and fast-paced. Many do not have regular opportunities to experience nature or history. The number of youth visiting national parks, national historic sites and national marine conservation areas does not reflect their proportion of the Canadian population. In fact, the average age of visitors to Canada's national treasures is over 50. On average, about one-third of our visitors are over 55 and, nationally, only 2 in 10 visitor parties tend to be families (p. 1).

The main question that was posed in this document was, “What will it take for Parks Canada to engage tens of thousands of youth (13-18 years) in connecting with their history and natural environments with the essence of being Canadian?” (Parks Canada, 2012, p. 2) The most prominent solution that is elicited in this document, explains that technology can be utilized to inform more youth about the existence, abundance, and significance of parks in Canada (Parks Canada, 2012). The technological distribution of information was the preferred method, since so many people are connected to media outlets, such as television, radio, or Internet (Parks Canada, 2012, p.2)

Both the Canadian Parks Council (includes both Provincial and National Park advocacy) and Parks Canada, in their aforementioned respective documents, emphasize goals that accentuate the necessity to expose youth to nature (Canadian Parks Council, 2014; Parks Canada, 2012). This is observably a common theme throughout analogous literature in this field of study.

Furthermore, while on the topic of youth, according to a study by Martin (2011), youth who were exposed to more than two hours of screen time per day, were more likely to encounter physical health impediments and partake in behaviours that are associated with negative health; experience adverse mental and social health issues, exhibit poor behaviour in learning environments, and demonstrate symptoms of attention deficit or other pedagogically disruptive emotional or psychological characteristics. Conversely, the same study revealed that increased time in nature was more likely to foreshadow physical activity participation, increase the likelihood of healthy weight maintenance, assist in the development of motor skills, aid in learning and development, and assist in reducing mental health and ameliorating stress levels (Martin, 2011).

Another factor dividing people and nature has been referred by Louv (2014) as "The Bogeyman Syndrome", where fear is the most prominent force preventing parents from allowing their children the freedom to play in natural areas; as the parents themselves might have done as children. "Fear is the emotion that separates a developing child from the full, essential benefits of nature…fear of traffic, of crime, of stranger-danger—and of nature itself" (Louv, 2014, p. 123). Several studies indicate that inhibiting unstructured outdoor play amongst children, poses great risks towards a child's physical and psychological health, the child's perceived concept of community, risk to self-confidence, and the ability to discern true danger (Charles & Louv, 2009; Louv, 2014). Joel Best, in his 2001 publication, *Damned Lies and Statistics*, discusses common urban myths regarding topics such as Halloween terrorism, missing children, and the instance of child mortality as a result of gun violence (Best, 2001). Following a thorough investigation of many of the alleged cases, he wrote, "We couldn't find a single case of any child killed or seriously injured by candy contamination; the Halloween sadist is an urban myth" (Best, 2001, p. 90). Although not directly related to outdoor play, this example is effective in emphasizing the contrived apprehensions that have provided parents reason to keep their children indoors. Furthermore, Best discusses prevalent statistics regarding child abductions that have drifted throughout popular media, and confirmed them to be fallacious (Best, 2001). It is essential that parents are able to differentiate between perceived and actual risk, in order for their children to receive the full benefits of the natural environments that exist around them (Louv, 2014). Several researchers have concluded that the instance of negative risk towards a child will be greater if natural exposure is inhibited by parents, than if the child is offered the opportunity to participate in unstructured natural play (Louv, 2014; Moore, 1997; O'Brien & Smith, 2002).

Nature immersion and physical activity are commonly considered to be complimentary to one another (Barton & Pretty, 2010). As aforementioned, the prevalence of nature-based play, natural park visitation, and the prominence of other outdoor recreation activities have declined for a variety of reasons (Kareiva, 2008; Manning, 2011; Pergams et al., 2008). Exercise alone has been shown to provide outstanding positive brain implications, such as: improved cognitive function, increased learning capacity, reduced symptoms of numerous mental illnesses, mood regulation, improved immune function, improved cardiovascular health, and countless other positive effects (Ferris, Williams, & Chen, 2007; Selhub et al., 2014). The positive effects of physical activity are enhanced further when the participant is immersed within a natural setting (Barton et al., 2010; Selhub et al., 2014). Outdoor exercise has been shown to lower systolic blood pressure to a greater degree, compared with indoor treadmill training (Maller, Townsend, Brown, & St Leger, 2002). Additionally, an accumulation of evidence insinuates that proximity to natural environments is the best predictor of a person's physical activity, even when juxtaposed with community centres and gyms (Canadian Parks Council, 2014).

There are however, many additional issues that can be associated with typical urban lifestyles, and a corresponding lack of nature exposure (McCann et al., 2003). The absence of unstructured nature-based play amongst youth is a contributing factor to the steadily increasing rates of obesity in Canada (Hammond, McFarland, Zajicek, & Waliczek, 2011; Public Health Agency of Canada, 2013). The observed and well-documented increase in childhood obesity over the past forty years has become a pervasive and thoroughly discussed matter in the media, and throughout scientific literature (Ebbeling, Pawlak, & Ludwig, 2002). Table 1 introduces several of the issues contemporary amongst human populations in Canada, which both inhibit social succession and longevity of life. Table1 additionally offers several solutions to the

problems introduced, which will be discussed in further detail in the next segment of this literature review. It is important to consider that Table 1 provides positive solutions to the issues identified, from the perspective of Canadian Parks Council, which is primarily focused on factors that influence, or can be influenced by parks.

	HEALTHY CANADIANS	PRODUCTIVE AND INNOVATIVE WORKFORCE	NURTURED AND ENRICHED CHILDREN
SOCIAL ISSUES FACING CANADA	Obesity, heart disease, vitamin D deficiency, depression and other mental health issues are impacting the long-term health of Canadians. Chronic health issues and demographic changes are projected to increase per capita health care spending by almost 60 per cent over the next decade, placing a strain on other government services. Active living in the outdoors supports the health and well-being of Canadians, helping to reduce the burden on the healthcare system.	Canada needs a healthy and innovative workforce to support a strong economy. The health of Canadians affects workplace productivity, affects local and national economies, and adds to the tax base available to fund government services Canadians value. Risk takers and innovators with critical thinking skills keep the country competitive, on the leading edge of discovery, and a leader among its G20 counterparts.	The lack of outdoor play is short-changing the education, health, and development of our children. Play and experiential learning helps improve motor functions, creativity, decision-making, problem solving and social skills, yet almost have of Canadian children get less than three hours of active play per week. By contrast, Canadian children and youth spend on average almost 8 hours per day in front of a screen.
BY THE NUMBERS	**1 in 4 vs 1 in 2:** Number of Canadians who are obese today, compared to projections for 2030. Rates in children have tripled since the 1980s. **$4.6 B and 19%:** Financial burden of obesity on the Canadian economy in 2008, and percent increase in costs since 2000. **9 in 10:** Proportion of Canadians that would prefer to spend time as a family outdoors in nature (rather than inside)	**Missing CEOs:** The next generation of corporate leaders are lacking critical skills to take the helm. **3 to 1 vs 6 to 1:** Canadians in the workforce for every retiree by 2031, compared to the 1980s. **1 in 2:** Projected proportion of Canadians with low literacy levels by 2030s.	**1 in 20:** Canadian children with ADHD. **300%:** Percent increase in child level obesity since the 1980s. **12 to 19:** Age group since the 1990s with largest increase in daily functioning problems. **Less Caring:** Intimacy and empathy scores in 12 year-olds have declined since the 1990s.
HOW NATURE HELPS	-Promotes physical healing and strengthens immune system -Linked to enhanced activity of cancer fighting cells -Lowers blood pressure and helps mitigate heart disease -Encourages people to be	-Reduces stress and mental fatigue in the workplace -Helps improve moods and stimulate coping skills -Stimulates critical thinking and risk taking skills in children, leading to a more innovative workforce	-Reduces negative symptoms of ADHD in children -Stimulates critical thinking and risk taking skills in children -Stimulates cognitive and emotional development in children

	physically active -Increases life expectancy and linked to faster recovery times -Reduces feelings of anger, aggression, anxiety and depression	-Linked to the development of positive aspirations -Encourages the development of responsible adults -Linked to better student academic achievement, leading to a better educated workforce	-Linked to better student academic achievement -Unstructured play outdoors influences brain development
THE CONTRIBUTION OF PARKS	**Natural hospital and medicine** -Natures gym—trails to hike, lakes to swim, hills to climb -Ideal places to escape the daily pressures of life -Fighting the blues—best therapeutic landscapes in Canada. -Activities for all ages and interests.	**A natural high** -Best places to reduce workplace stress and recharge -Destinations for corporate team-building -Ideal places to encourage social interaction and stimulate empathy and creativity -Best places to foster future environmental stewards	**A natural classroom** -Amazing venues for active play -Best places to maximize cognitive development of children -Awesome places for school trips -Park interpreters dedicated to great visitor experiences and fun learning.

Table 1. Summary of Canadian Statics & Benefits of Nature (Canadian Parks Council, 2014, p. 24)

Curative Effects: Nature as an Asset to Human Health and Longevity

In determining whether direct exposure to natural areas can foster a sense of stewardship, it is essential to first understand the existing foundation of literature deliberating on the influence natural areas can have on human psychology. An increasing foundation of research is discovering "that beyond this fundamental relationship exposure to the non-human natural world can also positively enhance perceptions of physiological, emotional, psychological and spiritual health in ways that cannot be satisfied by alternate means" (Brymer, Cuddihy, & Sharma-Brymer, 2010, p. 21; Canadian Parks Council, 2014; Kaplan, 1995; Nomura, 2011; Phillips, 2011; Selhub et al., 2014).

"Spirituality, which has been posited within Ecopsychology frameworks to be experienced in and through a sense of relationship with nature", is often referenced to be one of the mechanisms mediating mental health (Kamitsis & Francis, 2013, p. 136). The field of Ecopsychology has long recognized that engagement with nature, through both direct sensory

exposure and a sense of connectedness, has been shown to have a positive effect on psychological health and wellbeing (Kamitsis & Francis, 2013). Science once rejected the idea of spiritual experiences in nature, since the concept was often conceptualized through a supernatural lens; the two however, are not synonymous. “Spiritual refers to the experience of being related to or in touch with an ‘other’ that transcends one’s individual sense of self and gives meaning to one’s life at a deeper than intellectual level” (Schroeder, 1992, p. 25) More recently, studies have begun identifying the various elements and features present in natural areas that offer psychological catharsis (Selhub et al., 2014). According to a study by Kamitsis et al. (2013), “positive relationships between both nature exposure and connectedness to nature with psychological wellbeing, were significantly mediated by spirituality. It is concluded that spirituality can be an important aspect of one's experience of nature” (p. 136). Some of the known mechanisms that contribute to feelings of spiritual connection in natural areas are discussed in this chapter.

Natural areas are often abundant with multiple innate features that aid in cognitive and physical function and overall well-being (Selhub et al., 2014). Some of these qualities existing in nature such as, natural landscapes, sounds emitted by naturally occurring sources, and sunlight are observable, and others such as, negative ions, certain phytoncide, and Mycobacterium vaccae are virtually undetectable to human senses (Chorowski & Jaszewski, 1982). The benefits associated with exposure to these elements are discussed throughout this section of the literature review. This chapter additionally discusses outcomes that are linked directly to exposure to these elements, as well as other features present in natural environments.

Studies are revealing that nature may be useful as a therapy for learning disabilities, such as ADHD, with the potential to replace the use of conventional behavioural therapy and

medications (Berto, 2005; Kuo, Faber & Taylor, 2004; Louv, 2014). Additionally, many other psychological disorders that sometimes occur in conjunction with ADHD, such as anxiety and depression, can also be mitigated through an increased exposure to nature (Berto, 2005; Openstax CNX, 2014). Research has indicated that humans require only minimal exposure to natural areas in order to procure benefits (Louv, 2014). The benefits of unstructured, nature-based play are extensive; as such, Louv (2014) has suggested alternative options to benefit those who have few opportunities to actively utilize natural areas, such as "greening" office and school environments, which can assist in creating an increased level of "green" exposure, as well as instilling an awareness of stewardship and natural systems within schools (Louv, 2014). Green environments are those that possess flora, or other natural features to a varying degree, making a surrounding feel more like nature (Louv, 2014). The exposure required to reap nature's benefits can be as minimal as growing plants in a work environment, exercising outdoors, gardening, owning a pet (the benefits between pet ownership and physical and mental health is evident), and planting trees near windows in your home (merely seeing trees can lower blood pressure) (Chang, Lin, & Chou, 2006; Louv, 2014; McNicholas, 1997; Selhub et al., 2014). Research has indicated that the presence of potted plants in close proximity to a computer workstation can result in decreased eyestrain and operator fatigue, improved productivity, quickened reaction time, improved mental processing, and increased attention span (Bringslimark, Hartig & Patil, 2009; Fjeld, 2000 ; Selhub et al., 2014).

Reaping the benefits that can be generated through contact with natural environments can be achieved in various ways. For example, there are many programs that aim to provide nature-based experiences to people of all ages in order to educate and fulfill a closer relationship between humans and the natural world. For example, Project D.A.R.E. (Development through

Adventure, Responsibility, and Education) is a prevalent organization that integrates adventure therapy and wilderness exposure to rehabilitate adjudicated youth (Sakofs et al., 1991). Studies have shown that Project D.A.R.E. is an effective intervention in the amelioration of anger management and social skills amongst young offenders, who have subsequently demonstrated substantial improvements in emotional and behavioural well-being (Wendigo Lake, 1992). Furthermore, the concept of wilderness rehabilitation is foundational in many Aboriginal cultures, and continues to be prevalent amongst both Aboriginal and non-Aboriginal populations today (The term "Aboriginal" includes First Nations, Métis or Inuit) (LLRIB Education Department, 2014; Statistics Canada, 2015). For example, the Woodland Cree have developed "Project Venture", which aims to prevent substance abuse, anti-social, and criminal behaviour through adventure-based experiential activities, adventure camps and treks, as well as through community-oriented service learning initiatives (LLRIB Education Department, 2014). Project Venture additionally aims to instil confidence within participants, which reinforces their skills throughout nature-based experiences, and fulfils historical roots in understanding the harmonious balance between humans and nature (LLRIB Education Department, 2014). Other reputable programs, such as Outward Bound, Wilderness Education Association, and Wilderness Awareness School, aim to connect youth with nature using a variety of different methods. Wilderness Awareness School has a goal to "leave no child inside", which is made possible through their affiliation with the global community of schools, dedicated to connecting children with nature (Wilderness Awareness School, 2013). Outward Bound and Wilderness Education Association, maintain similar goals, as they seek to equip outdoor leaders with the judgment and decision-making skills required to safely enjoy wilderness areas, and provide wilderness experiences to the public, under the leadership of trained professionals (Outward Bound Canada,

2014; Wilderness Education Association, 2014). One of the limitations associated with many nature-based experience programs, is they tend to be quite costly, creating inaccessibility to less advantaged families (Wagner, Baldwin, & Roland, 1991). This raises the questions: what can be done to expose more people/children to nature? How can we make natural areas more accessible? Will an increase in exposure to nature create more interest in protecting natural areas?

Since the benefits associated with nature-based activity have become more pervasive in academic literature, the Ontario Ministry of Education has endorsed an increase in curricular content that is directed towards environmental awareness, and stewardship; however, this alone will not suffice in cultivating environmental protection (Gough, Walker & Scott, 2001; The Ontario Curriculum Resource Guide, 2011). In order to engender an attachment and intimate relationship with nature, children must receive opportunities where they are able to directly contribute their time towards observing or studying nature, especially during school hours (Grant & Littlejohn, 2001; Jordan, 2009). For example, lessons that are facilitated within an outdoor environment have been shown to greatly exacerbate positive learning patterns and increase concentration, juxtaposed with a conventional indoor learning environment (Louv, 2014; Meyer, 1997). Studies are revealing that exposure to natural environments can dramatically improve test scores, especially amongst students with learning disabilities such as ADHD (Louv, 2014). It is important to note that leaving environmental education to curricular teachings has generated some contention, as studies show it can be more effective for parents to be the first educators to assist in developing loving, respectful, and understanding relationships with natural areas, prior to in-school learning (Corcoran, 1999; Vartuli & Winter, 1989). This parental leadership is however becoming less feasible as more parents disconnect from natural surroundings (Cohen,

1999). Additional material regarding school curriculums and environmental efforts is discussed in further detail in a later segment of this literature review.

There are explanations for how natural areas foster advantageous perspectives, such as positive moods, increased focus, and feelings of overall well-being; many of these are widely unknown or misunderstood (Selhub et al., 2014). For example, the existence of negative ions is often neglected in literature, as they cannot be seen or sensed directly (Kawai & Mieno, 1997). Negative ions are charged molecules that we inhale with each breath, carrying an extra negative charge due to nature's splitting action (Selhub et al., 2014). They are found in abundance in forests and near bodies of moving water (Nakane, Asami, Yamada & Ohira, 2002). Research has linked the regional abundance of negative air ions to improved human health and longevity, cognitive function, as well as significant reductions in stress, depression, and anxiety levels (Baron, 1987; Iwama, Ohmizo, & Obara, 2004; Nakane et al., 2002; Selhub et al., 2014). Negatively charged ions are depleted when exposed to polluted environments, as well as enclosed rooms (Selhub et al., 2014). The presence of electronic equipment such as televisions, photocopy machines, and computer screens, drastically reduces levels of negative ions, especially within confined spaces (Selhub et al., 2014). Additionally, it has been found that patients who are susceptible to panic attacks are far less likely to experience panic after rainfall, as the negative ion count is increased dramatically (Chorowski & Jaszewski, 1982). In controlled environments, researchers are able to provoke anxiety, suspicion, and mania by decreasing the levels of negative ions present around the subjects (Chorowski et al., 1982). Due to the nature of wintertime, there are reduced quantities of negative ions in the air, which has been linked to seasonal ADHD, generalized anxiety disorder, depression, and panic disorder (Selhub et al., 2014).

Negative ions are undetectable to human senses; however, there are beneficial elements present outdoors, that are directly observable, such as sunlight, which until recently has been widely misunderstood (Gillie, 2011). Since Roman times, medical professionals have been able to quantify several of the benefits associated with exposure to natural light. Romans advocated therapeutic garden ventures for individuals who displayed symptoms of mental illness, as they recognized the improvements that ensued as a result (Selhub et al., 2014). It was not until the 1980s, researchers were able to identify a connection between low melatonin levels and depression, especially during the winter months when seasonal affective disorder (SAD) is most prominent (Holick, 2011; Lambert, Reid, Kaye, Jennings, & Esler, 2002). Researchers have additionally discovered that sunlight plays a fundamental role in the production of the mood-regulating brain chemical serotonin, and that the duration of exposure to sunlight was directly linked to serotonin levels in the brain (Lambert et al., 2002; Mead, 2008). Many depression medications, such as Prozac, attempt to mimic the benefits that sunlight can provide humans in direct exposure (Selhub et al., 2014). "Exposure to natural sunlight has been associated with improvement in mood, reduced mortality among patients with cancer, and reduced length of hospitalization for patients who have experienced myocardial infarction" (Walch, Rabin, Day, Williams, Choi, & Kang, 2005 p.156). Walch et al., (2005) discovered that when exposed to sunlight, patients who had undergone spinal surgery reported decreased pain, stress, and analgesic medication use.

Additionally, the skin synthesizes sunlight into vitamin D through a photosynthetic reaction, triggered by UVB radiation (Holick, 2011; Mead, 2008). Unlike many other micronutrients, vitamin D is not obtained through diet, and is best utilized by the body when absorbed through the skin (Mead, 2008). While outside, humans naturally and often

subconsciously benefit from direct exposure to natural sunlight. While it is vital that humans understand the curative significance of safe sunlight exposure, it is equally as essential to allow children to receive frequent opportunities to harness the benefits of natural light and understand that artificial spectrum lighting is far less effective in providing humans with the essential elements that sunlight can offer (Selhub et al., 2014).

Just as the benefits of sunlight have long been documented, it has long been a common occurrence for people to report changes in perspective and emotion following a forest-based excursion (Bowler et al., 2010). In green surroundings (areas supporting an array of flora) natural aromatic, olfactory-provoking chemicals are present, which are collectively referred to as phytoncide (Selhub et al., 2014). In combination, phytoncide synergistically balance mental perspectives, and stimulate powerful attention towards the environment in which a person is immersed (Phillips, 2011; Selhub et al., 2014). The sense of smell often fails to detect many of these chemicals and hormones; however, they collectively have the ability to uplift and relax the brain (Kobayashi, Wakayama, Inagaki, Katsumata, Hirata, Hirata, Shimizu, Kawada, Park, Ohira, Kagawa & Miyazaki, 2009; Nomura, 2011). Possessing antioxidant properties, Phytoncide are linked with reducing the risks of cancer, alleviating stress, improving immune and digestive function, reducing anxiety, increasing pain thresholds, and stimulating brain connections (Cheng, Chu, Lin, Chang, &Wang, 2009; Kobayashi et al., 2009; Nomura, 2011). In urban areas, there are greater concentrations of airborne synthetic chemicals, which are often ingested by the body in a similar manner to the natural counterpart (Cheng et al., 2009; Selhub et al., 2014). Urban synthetic chemicals have the opposite effect as nature's phytoncide, as they are linked to "depression, anxiety, autism, aggression, irritability, pain, fatigue, frustration, short- and long-term cognitive decline, decreased altruism, and an overall downturn in individual

helping behaviour" (Selhub et al., 2014, p. 86). Many illnesses can be attributed to synthetic environmental chemicals, with specific relevance to chronic fatigue syndrome and fibromyalgia (Bell, Baldwin, & Schwartz, 1998).

Research is showing that simply using our innate senses in nature, such as visual, auditory, or olfactory-based senses, can have a profound impact on human psychological state. Roger Ulrich (1981) studied the effect of natural scenery on the brain by dividing students into two separate groups and having them voluntarily participate in a psychological exam (Ulrich, 1981). One group of students viewed slides of urban areas, devoid of nature, with no humans present, whereas the second group viewed slides portraying natural landscapes, and nature areas that contained an abundance of flora and fauna. Measurements were taken of the effects of the slide presentation on alpha amplitude, heart rate, and emotional states (Ulrich, 1981). Ulrich found the nature scenes increased positive affect, as they incited feelings of affection, playfulness, friendliness, and elation (Ulrich, 1981). Additionally, vegetation slides maintained viewer attention and interest more effectively than the urban scenes (Selhub et al., 2014; Ulrich 1981). Encouraged by the positive conclusions of his first study, Ulrich conducted further research to measure brain activity while participants viewed the various slides (Selhub et al., 2014). Participants viewing the slides that contained natural scenery had increased levels of serotonin in the brain (Ulrich, 1981). Serotonin is often referred to as "the happy chemical", as it often triggers the feeling of well-being, and reduces the prevalence of stress (Selhub et al., 2014). Ulrich continued to pursue this particular topic, conducting many additional studies resembling the two aforementioned. These studies demonstrated similar results, only to further solidify the notion that merely seeing a picture of a natural landscape has the potential to initiate therapeutic bodily response (Ulrich, 1993).

Similar to viewing constructs of nature, simply listening to the sounds in nature has been shown to provide humans with therapeutic benefits (Annerstedt, Wallergård, Johansson, Karlson, Grahn, & Währborg, 2013). Research has indicated that noise, sounds, and acoustics generated by manufactured constituents within urban areas, can not only damage hearing, but they can promote the production of stress hormones, such as cortisol, affect the cardiovascular system, compromise cognitive and academic performance, impair the immune system, contribute to insomnia, and increase the likelihood of depression and anxiety (Alvarsson, Wiens & Nilsson, 2010; Selhub et al., 2014). Studies also show that urban or human induced sounds also have the ability to disrupt natural areas, such as parks, for both human and animal occupants (Pilcher, Newman, & Manning, 2009). Humans interpret and process nature-based sounds far differently than they do manufactured or urban sounds; however, research indicates that natural sounds which occur in an urban environment will actually override the manufactured detrimental noises, allowing the listener to procure the benefits of the natural sounds (Alvarsson et al., 2014; Selhub et al., 2014; Ulrich, 2002). Research has shown that the sounds of a creek can manipulate blood flow to the brain and create a state of relaxation; this altered state in brain blood flow is in entire opposition to the state of the brain during high stress moments (Alvarsson et al., 2014; Dijkstra, Pieterse, & Pruyn, 2006; Selhub et al., 2014; Ulrich 2002). This phenomenon has prompted many hospitals to create natural-type environments in and around the hospital (e.g., gardens and fountains), that serve as a catalyst for positive bodily responses in order to alleviate stress and anxiety amongst patients, as well as improve general mood and health (Zimring, Ulrich, Zhu, DuBose, Seo, Choi & Joseph, 2008).

Additionally, researchers have determined that hearing recordings of birds in the early morning can improve mood and reduce levels of fatigue (Selhub et al., 2014). Natural

distractions, such as the sights and sounds of nature, can additionally mitigate physical pain significantly, offering an alternative solution to pain medications, under particular circumstances (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003). These positive qualities can be attributed to millions of years of evolution, which occurred within nature, in the absence of any sort of urban presence (Alvarsson et al., 2010).

Another beneficial compound present in natural areas, that until fairly recently was drastically misunderstood, is soil. Soil is plentiful on earth, although it is often perceived to be dirty or unsanitary. Soil is abundant with different types of bacteria; however, bacteria itself is often regarded in a negative manner (Selhub et al., 2014). Research is showing that frequent exposure to the harmless microorganisms (bacteria) in soil, bolsters human immune function and helps inhibit the development of environmentally engendered allergies, such as reaction to pollen or dandruff in animal fur (Lowry, Hollis, De Vries, Brunet, Hunt, & Lightman, 2007). Studies have been conducted where the microorganisms in soil, Mycobacterium vaccae, have been injected into mice; results show that these organisms induce a serotonin release in the brain, which causes happiness and feelings of well-being (Lowry et al., 2007). There is speculation as to whether this could be beneficial as a treatment for depression; reduce anxiety in humans, and improve cognitive abilities in a learning environment (Matthews & Jenks, 2013). Ingestion of Mycobacterium vaccae has been shown to decrease anxiety-related behaviour and improve learning in mice. Another study was conducted where children living in an agriculture setting were compared with non-farm exposed children. The results of this study determined that children who grew up in environments where they withstood a vast array of microbial exposure, such as traditional farms, are resilient or “protected from childhood asthma and atopy” (Ege, Mayer, Normand, Genuneit, Cookson, Braun-Fahrländer, & Mutius, 2011, p. 701). These studies

further confirm the requirement for a reconnection between humans and natural environments. These studies in particular demonstrate that exposure to nature in ways as accessible as gardening, can not only offer potential for ameliorations in human health, but they may have the ability to create cognitive improvements, assist in reconnecting humans to natural environments, improve socialization, and improve fitness (Kaplan, 1995; Wang & MacMillan, 2013).

The constituents that are beneficial to human health, discussed in this section, are discussed in relatively limited detail compared with the vast bodies of research surrounding this topic. Countless studies are/have been conducted with regard to the benefits humans procure from nature exposure. The aforementioned benefits that nature can provide are pervasive and have extraordinary effects on human health and well-being. Additionally, many of the innate and advantageous qualities of nature were discussed in a fragmented context in this section; consider the positive impacts nature can provide when an individual is exposed to all of these qualities simultaneously. In the discussion of whether exposing humans to nature will create a sense of stewardship towards natural areas, it is equally important to recognize and understand the impact and influence nature can have on humans, some consciously accrued and many not. How might these positive aspects, provided to humans through nature play a role in the experiences people have in natural areas? Can exposure to natural areas help to mitigate the increasing divide between humans and the natural world?

Protecting what We Know

Reconnecting humans to nature through direct exposure can provide outstanding physical and psychological benefits, offer the opportunity to educate people further on the

interconnectedness of environmental systems, bolster the requirement for environmental awareness, and seems to foster the desire to partake in stewardship and commitment with regard to the natural world. Stewardship is a term commonly used in environmental literature which can be defined as, "Conserving, restoring and enhancing ecological and cultural resources and maintaining biological diversity in representative, significant, and formally protected areas of land and water" (Canadian Parks Council, 2014, p. 34). The Canadian Parks Council has been campaigning to raise awareness concerning the extensive benefits of nature exposure, specifically the potential opportunities that Canada can provide, given its prime geographical surroundings (Canadian Parks Council, 2014). The logic behind this movement is prospectively to increase the number of people who visit parks within Canada, by means of raising awareness and attempting to re-establish park culture. The following quote embodies the perspective of the Canadian Parks Council, regarding the connection between humans and the natural world:

> Humans are dependent on nature to survive and Canadians can only reap nature's optimal benefits if the natural environment is healthy. But, the relationship between people and nature is a reciprocal one. People need to care about the environment in order to value it. And appreciation, love, care and protection are direct outcomes of our experience of and relation to nature now, and for generations to come (Canadian Parks Council, 2014, p. 34).

Existing theories and research alludes that humans will only protect natural areas that they know or have experienced (Canadian Parks Council, 2014; Chawla, 1988; Kellert, 2002; Selhub et al., 2014; Sobel, 1995; White, 2004). Various researchers have suggested that the current anthropogenic shift away from nature discussed at the beginning of this chapter, will be associated with reduced empathy and attraction to nature, creating less interest in environmental

conservation efforts (Selhub et al., 2014). Selhub & Logan in their 2014 publication *Your Brain on Nature,* reason that society's massive withdrawal from nature immunizes humans against empathetic views of nature. The authors further accentuate that sustainability of the planet is far beyond simply composing one's self as a good citizen and recycling, "it is ultimately about maintaining an intimate relationship with nature"(Selhub et al., 2014, p. 3). Selhub et al. (2014) postulate that in order to empathize fully with nature, and become "green", one must actually have meaningful exposure to nature. As such, biologist Elaine Brooks states, "humans seldom value what they cannot name, or experience" (Louv, 2014). Similarly, David Attenborough once said, "No one will protect what they don't care about; and no one will care about what they have never experienced" (Canadian Parks Council, 2014 p. 26). Quotes and hypotheses such as these emphasize the importance for research regarding this notion.

Many environmentalists have deliberated statements similar to the above quotes, regarding humans protecting only what they have experienced. Even with the publishing of a myriad of environmental journals, the earth's climate continues to be altered, biodiversity is ever decreasing, natural resources are exploited at alarming rates, and human health is declining globally as a result of environmental influences (Parry, Rosenzweig, Iglesias, Livermore & Fischer, 2004). The fact remains that the number of people who have directly experienced and become familiar with natural environments has been in steady decline (Balmford, Beresford, Green, Naidoo, Walpole, & Manica, 2009; Pergams et al., 2008). If it is true that people need to experience nature in order to foster a connection, and increase environmental preservation and commitment, there will need to be a movement towards such exposure; however, it is equally imperative to find out whether these predictions are accurate.

David Sobel has stated; “If we want children to flourish, we need to give them time to connect with nature and love the Earth before we ask them to save it” (Sobel, 1995, p. 16). Sobel additionally describes the concept of premature abstraction, which is teaching within school systems too abstractly too early (Sobel, 1995). The effects of premature abstraction were observed amongst numerous elementary students, in regards to mathematics, as they were having difficulties connecting mathematical symbols to the outside world. Their reaction to this predicament was to turn away from mathematics entirely (Sobel, 1995). As a result, educational curriculums across North America have recently been restructured to alter the way educators teach mathematics, in order for students to identify with the concepts, and relate them to the world around them (Elmore, Peterson, & McCarthey, 1996; Ministry of Education, 2005).

According to several researchers, a similar effect is progressing with regard environmental education, as children hear of extensive degradation of forests, biodiversity, the instance of oil spills, and the growing prominence of climate change (Louv, 2014; Sobel, 1995). According to Sobel, children are handed the responsibility of dealing with these issues long before they are able to understand the concepts with a depth of understanding, instigating a fear of the future, referred to as “ecophobia” (Sobel, 1995). Louv has recommended that educators discuss the future of our planet in a positive manner, offering solutions to Earth’s issues, and entirely avoid the “apocalyptic mentality” that is often present in environmental discussions (Louv, 2014).

John Burroughs cautioned that, "Knowledge without love will not stick. But if love comes first, knowledge is sure to follow" (White, 2004). The ostensible issue with most environmental education programs for young children is that they try to impart knowledge and responsibility before children have received the opportunity to develop a loving relationship with

the earth (Sobel, 1996; Wilson, 1997). It is fundamental that children develop a love of nature before they are told to save and protect it (Kellert, 2002).

Chawla (1988) work titled, *Children's Concern for the Natural Environment,* conducted research outlining the factors responsible for instigating ecological concern amongst environmentalists. The study revealed two prominent factors that were widely reported amongst participants, which inspired their efforts to protect ecological integrity: the amount of time they spent outside in nature as a child or adolescent, and/or the presence of an adult who once taught them proper respect for nature (Chawla, 1988). Many studies have focused on various methods that can be applied by both parents and educators to expose/introduce children to the natural environment at a young and impressionable age (Louv, 2014; Moore & Cosco, 2000). The process of exposing children to nature can be a very simplistic process. According to Moore and Cosco (2000) it is most beneficial for children to first receive exposure to nature nearby their home or within their community. Once they are familiar, comfortable, curious, and have played in local areas, they should be introduced to additional regions of various levels of natural integrity (Moore et al., 2000). "Children are born curious. Through an innate motivation to explore, the strange becomes experienced, familiar, and deeply known through practice and repetition. The purpose of design is to ensure that the necessary stimuli are ever present in the child's environment to set this learning process in motion through play" (Moore et al., 2000, p. 2). Although several of the aforementioned studies predominantly discuss children in relation to natural environments and environmental issues, it is also critical for adults to learn about environmental issues, in ways that promote interest and creativity. Analogous to children, adults have a tendency to turn away from issues that they feel are beyond their control (Hungerford, & Volk, 1990). Perhaps if more adults received exposure to natural areas, learned values and

connections with nature could be formed through experience; such values and connections could result in future environmental stewardship.

Place attachment, or attachment to place, is closely linked to experience-based stewardship; however, the two are far from synonymous. The physical factors that might influence a person to become psychologically attached to a specific natural area or place are perceivably limitless. Attachment to place is often difficult to quantify, as factors of influence range dramatically between individuals (Manning, 2011). According to Manning (2011) attachment to place is a multifaceted connection, which involves emotional and symbolic associations.

A study by Halpenny (2010) investigated the ability of place attachment as a predictor for place-specific and general pro-environment behavioural intentions. The results of this study "confirmed the strength of place attachment's ability to predict place-related pro-environment intentions. It also identified place attachment's prediction of pro-environment behavioural intensions related to everyday life. Place identity mediated the effects of place dependence in predicting pro-environment intentions" (Halpenny, 2010, p. 409).

Similarly, a study by Vaske & Kobrin (2001) investigated place attachment among participants aged 14-17, who had participated in local natural resource work programs. Results demonstrated that place identity mediated the relationship between place dependence and environmentally responsible behaviour. "Place dependence influenced place identity and place identity was significantly related to environmentally responsible behaviour" (Vask et al., 2001, p. 16). Overall, these findings suggest that encouraging an individual's connection to a natural setting facilitates the development of general environmentally responsible behaviour.

These studies demonstrate that developing a connection with a particular place can be a predictor for a person's environmental behaviour; however, there are few studies that investigate whether this place-based environmental benevolence will prevail beyond that particular place, extending to other natural areas or environmental causes.

Stephen Kellert published a research study in 1998, titled *A National Study of Outdoor Wilderness Experience*, where the effects of three American outdoor wilderness experience programs were examined. The programs involved in the study were Outward Bound (OB), Student Conservation Association (SCA), and National Outdoor Leadership School (NOLS) (Kellert, 1998). Kellert stresses that these organizations emphasize the personal growth and development that participants will undergo throughout their experience in wilderness areas, and the importance of fostering an appreciation and developing stewardship towards wilderness areas (Kellert, 1998). In his study Kellert provided 429 participants in the aforementioned outdoor wilderness experience programs with surveys to measure how effective these experiences were in fostering genuine stewardship amongst participants. He conducted studies before and after the organized expeditions, as well as six months following, in order to determine whether participant perspectives would attenuate with time (Kellert, 1998). Kellert's results concluded that a small number of participants would alter their life goals, including employment decisions, around environmentally positive initiatives. Many of the participants emphasized a considerable addition to their understanding of environmental systems and biology, and many participants reported vast improvements of environmental skills, enhanced self-confidence, self-esteem, autonomy, independence and initiative, and many reported a newly established sense of personal meaning and direction (Kellert, 1998).

Kellert's study (1998), focusing on wilderness experience, suggests that the changes in conservation behaviour diminish over time amongst participants of short-lived programs, especially amongst those who did not return to remote natural areas. This is an important factor to take into consideration; however, the aforementioned study does not measure participants' willingness to return to remote areas, nor does it indicate through follow-up, whether participants engaged in future nature-based expeditions.

Research has been conducted regarding the transformative or life-changing experiences that have been obtained through adventure program participation; however, few have examined the impacts of such programs months or years after completion, especially with regard to environmental stewardship (Sibthorp, Paisley, Furman, & Gookin, 2008). Studies that have focused on long-term retained values, identified that self-awareness, respect for different others, and ability to make changes and confront challenges were lasting attributes of wilderness experience expeditions (Miller, 2001). Sibthorp et al. (2008) in their longitudinal study of The National Outdoor Leadership School (NOLS) found that the most prominent lasting qualities among participants were the development of outdoor skills, the ability to get along with different types of people, the ability to serve in a leadership role, and a personal perspective on how life can be simpler.

Similarly, a study of analogous design by Goldenberg & Soule (2015) measured the long-term impacts of Outward Bound and NOLS programs, with regard to a variety of outcomes. "Results of this study show how OB and NOLS programs continued to increase participant self-respect/esteem/confidence, impart transferable lessons and skills, and provide a sense of self-awareness four years after course participation" (Goldenberg et al., 2015, p. 284). Once again, it is important to note that although these and similar experience-based programs occasionally

emphasize environmental ethics in their courses, the absence of research on lasting stewardship tendencies amongst participants, conceivably arises from the absence of such teachings during the courses.

The concern addressed in this literature review is, in North America, the number of people visiting natural areas has declined dramatically over the past several decades, and as aforementioned, the benefits associated with nature exposure have been researched and documented extensively. This bifurcation with nature has instigated much concern regarding the current and future state of the natural environment, and could be impacting the lives of those receiving minimal or no exposure to natural areas. One of the absent components to the broader topic of nature exposure, that has been widely theorized but infrequently researched, is whether or not the future health of the natural environment is dependent upon human interaction and experience within natural areas. Many environmentalists, as aforementioned, have hypothesized that this contact or immersion within natural environments is essential in fostering environmental awareness and stewardship; however, it has yet to be thoroughly investigated. It is additionally essential to consider these types of interactions, juxtaposed with the longevity of visits, and the ages of individuals in a study, and how that might impact a person's willingness to protect natural environments. It is critical that this type of research is conducted, in order to help ensure a healthy natural environment for successional generations.

The following chapter discusses researcher perspectives, the methods used in collecting and interpreting data, as well as the ethical considerations that were required for this study.

CHAPTER 3

Methods

This section addresses researcher perspectives as well as techniques and methods that were utilized in the collection and analyses of data for this study. The data was collected with intent to identify and adhere to the aforementioned environmental and social concerns associated with the increasing divide between humans and natural environments. Furthermore, the data collection process was geared to identify any existing connections between nature exposure/experience and environmental stewardship, which may have been cultivated through experiences that participants procured on an organized nature-based expedition. The results of this study, and subsequent studies, could provide a knowledge base to aid in the restructuring of current environmental teachings, initiatives, and perspectives, catering to the circumstances in which people integrate nature and the health benefits derived from it more thoroughly into their lives.

Background/Worldview

I have chosen to conduct research in the fields of environmental studies, knowledge acquisition through nature-based experience, and environmental commitment, as it has long been a goal of mine to make a difference in the field of environmental studies, especially as it pertains to education. These areas of study relate directly to my personal experience and interests. Having completed a Bachelor of Environmental Studies degree (Trent University) and a Bachelor of Education degree (Lakehead University), I have catered my interests towards discovering non-conventional ways in which individuals can learn about and become connected to natural areas

through direct experience, which can perhaps foster ecocentric perspectives and lifestyle alterations. Ecocentrism is antagonistic to anthropocentrism, and is defined by having capabilities to affect, control and protect the natural environment (Hoffman & Sandelands, 2005). Many theories suggest that in order for people to value the natural world they must first receive exposure to natural areas (Louv, 2012; Selhub et al., 2014; Sobel, 1995). My research addresses this notion through the lens of Ecopsychology, utilizing qualitative research methods, which are directed towards analyzing changes in perspectives of environmental stewardship, after participants engage in an organized wilderness expedition. The field of Ecopsychology "recognizes that a capacity to live in balance with nature is essential to human emotional and spiritual well-being, a view that is consistent with the healing traditions of Indigenous peoples past and present, but lacking in present-day Western psychological theory" (Roszak, Gomes, & Kanner, 1995, p. 2) Ecopsychology closely examines the disconnect between humans and nature, and seeks to understand nature's role in rehabilitating healthy mental perspectives (Roszak et al., 1995).

I do not personally identify with one worldview or research perspective, because I believe there are appropriate applications for each individual philosophical viewpoint. My perspective regarding this research is most accurately classified as pragmatic, since I do not consider truth to be a constant variable in research, but an ever-evolving reality that shifts and plasticizes in conjunction with the state of global environments and human perspectives. For these reasons, my research is best accommodated by the intricacies of a pragmatic perspective (Bawden, 1904; Creswell, 2014).

> Pragmatism as a worldview arises out of actions, situations, and consequences rather than antecedent conditions. There is a concern with applications—what works—and solutions

> to problems. Instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand it (Creswell, 2014, p. 10).

Additionally, pragmatism "includes those who claim that an ideology or proposition is true if it works satisfactorily, that the meaning of a proposition is to be found in the practical consequences of accepting it, and that unpractical ideas are to be rejected" (Internet Encyclopedia of Philosophy, 2015). Although this does not directly adhere to my personal beliefs, it is the closest philosophy to my own. Throughout this research, I have attempted to identify the scientific explanations and practical solutions for how natural areas possess the capacities to alter mental processes, as opposed to accepting broader concepts, such as spirituality, without first discovering the primary elements that shape those perspectives or concepts.

Participants

The participants involved in this study participated in one of three different Outward Bound Canada (OBC) wilderness experience programs. Outward Bound Canada is a not-for-profit, charitable, educational organization, which offers urban and wilderness adventures in order to "cultivate resilience, leadership, connections and compassion through inspiring and challenging journeys of self-discovery in the natural world" (Outward Bound Canada, 2014). OBC is a compatible organization to conduct this particular research with, as their wilderness programs are pre-planned and prepared, with participants registering in advance. These characteristics simplified the investigation of the various opportunities available, the age of the participants enrolled in particular trips, and provided pre-determined trip durations, attracting the

individuals who complimented the interview criteria. The nine individuals who opted to participate in the study had varying levels of experience in natural areas, and were 18 years of age or older. This age group was selected for the study, since adults frequently provide more analytical responses, and provide more detailed information, compared with children (Cassel & Bjorklund, 1995; Goodman & Reed, 1986). Additionally, the pre-data collection process was shortened since there were fewer ethical hurdles to overcome (Punch, 2002).

Participant Recruitment

Purposive sampling was used to contact participants for this study. Purposive sampling is described as "a random selection of sampling units within the segment of the population with the most information on the characteristic of interest" (Guarte & Barrios, 2006, p. 277). This method most accurately describes the method used for this research, since the participants accommodated specific criteria and had been identified in advance of being contacted to participate.

In order to maximize participant recruitment potential, participants of three different OBC expeditions were contacted. Twenty-six participants were contacted by email, which contained the cover letter outlining the parameters and goals of the research; a consent form was also attached. Of the twenty-six individuals contacted, nine responded to participate in a telephone interview. The individuals maintained a range of previous nature-based experience, which offered diversity in the results of this study. Additionally, the expeditions occurred throughout geographically diverse locations in Canada: Alberta, British Columbia, Ontario/Quebec (crossed provincial border). This allowed for a more thorough investigation of

values and place, based on a person's comfort level in a geographical domain that is unfamiliar to them. There were participants involved in the study who had travelled from New Zealand and Europe, offering further diversification and additional perspective in the results.

Expeditions

Interviews were conducted with participants who partook in one of three different OBC trips, which were: Northern Ontario Educators' & Human Service Professionals Course (NOEHSP), Rocky Mountain Life Compass (RMLC), and Rocky Mountain Mindfulness (RMM). The NOEHSP course was created for people 21 years of age older, and occurred on the Dumoine River, Quebec. This course, as explained by OBC, "is designed for both teachers with no experiential education training as well as professionals working in the field of Human Services, who want to learn how to engage their audience in new exciting ways" (Outward Bound Canada, 2014). During this 14-day course, OBC taught fundamental aspects with regard to educating and inspiring audiences with diverse learning styles. This course hosted three of the nine participants involved in this study.

The setting of the RMLC expedition was northeast of Banff, Alberta, and consisted of participants with ages ranging from 19-30. This 14-day expedition was designed to "help young adults figure out their direction in life—whether that's deciding on a career path, where to live, who your true friends are, and what kind of relationships you're looking for" (Outward Bound Canada, 2014). This course hosted two of the nine participants involved in this study.

The RMM course, occurring west of Marvel Pass, British Columbia, was eight days in duration, and was designed for participants of age 25 and older. This course is designed "to help

adults who are seeking greater clarity—perhaps in times of challenge and transition—who need space to reflect on their lives or who want to learn or deepen a meditation practice, or simply want to walk their own path more deeply" (Outward Bound Canada, 2014). Four of the nine participants in this study partook in this expedition.

It is important to note that the participants in this study did not exclusively participate in the expeditions for the aforementioned purposes listed by OBC, as many expressed alternative/personal reasons for partaking in an OBC journey.

Data Collection

Interviews were chosen as the method of data collection since humans often interact highly effectively through conversation (Kvale & Brinkmann, 2009). Interviews generally elicit more personal information and understanding from an individual, as opposed to surveys or questionnaires (Cartwright, 1988). Furthermore, obtaining participants' personal information can be beneficial when searching for perspectives and understanding from participants (Kvale & Brinkmann, 2009). Interviews provide the opportunity for participants to become directly involved, and discuss their perspectives in detail (Kajornboon, 2005). In addition, the interviewees have the ability to discuss their perception and interpretation regarding a particular situation; "It is their expression from their point of view" (Kajornboon, 2005 p. 2). Furthermore, interviews, as opposed to surveys, can frequently provide a substantial and often detailed amount of information, when there is little existing research regarding specific topics and questions (Cook, 2009).

As such, I chose to conduct this research utilizing qualitative methods within a pragmatic context, to understand and explore the meaning of what individuals expressed throughout the interview process (Creswell, 2014). Qualitative research allowed for deductive analyses, which assisted in determining general themes, and allowed for data interpretation (Creswell, 2014). Qualitative research can be useful in situations where the researcher wishes to find out what is going on, from the perspective of the participants involved in the research (Bouma, Ling, & Wilkinson, 2012). In choosing whether to conduct qualitative or quantitative research, I first investigated analogous research to what I am proposing, to determine which methods those studies utilized. The majority of those studies were quantitative, granting the opportunity for a quality over quantity study throughout my research (Berg, 1995). By acquiring and including the perspectives, experiences, and conceptualizations of the participants into my research, through the processes of qualitative analysis, I have had the ability to accurately address my research questions (Bouma et al., 2012).

Telephone interviews were chosen for this study, since they are the most plausible method to be used, given the parameters faced. As previously stated, the participants in this study were from various areas of the world, and had participated in different trips, making face-to-face interviews extremely difficult. According to Sturges & Hanrahan (2004) telephone interviews can be nearly as effective as face-to-face interviews, and Seidman (2013) asserts that when necessary, long distance interviews can be effective. Seidman argues that if the researcher can access participants who live too far away to make travel and in-person interviews realistic, conducting telephone interviews is preferable to having to relinquish including these individuals.

One-on-one interviews were conducted and audio-recorded over the telephone approximately one month after the nine consenting participants had engaged in their respective

Outward Bound Canada wilderness expeditions. The interviews consisted of eight formal questions (see Appendix C), and often several probing or additional questions, oriented around obtaining a participant's post-trip knowledge, perspectives, and connections of the natural environment; compared with their reflective knowledge, perspectives and connections in advance of the trip. The interviews were then transcribed and analyzed in order to determine whether any changes in environmental perspective had occurred (Creswell, 2014). This was achieved by asking participants to reflect on how they felt regarding specific factors in advance of the trip, compared with their perspective afterwards. This method was used, since it was effective in studies of similar design, and it eliminates the requirement for pre-expedition interviews (Garst, Sheider, & Baker, 2001). Factors such as: Fear, future employment considerations, connectedness to the natural environment, change in environmental advocacy goals, changes in confidence, understanding of environmental systems, and a willingness to continue living with an increased level of exposure to natural areas, were under close examination. All of the interviews conducted in this study were between 25 and 35 minutes. Although it was pre-determined that the gender of participants should not have a significant impact on the results of this study, the balance between males and females was nearly even, with a 4:5 female to male ratio.

Data Analysis

The interviews conducted were recorded using multiple instruments to reduce the risk of technological error. The recorded interviews were transcribed verbatim into written text. Several coding documents were established in order to maintain consistency in the translation of the

interviews with regard to qualities of speech, such as emotions, pauses, and any emphasis that had been lent to particular words (Stock, 1994). Following the transcription process, a copy of the transcript was sent to the participants to allow for further revision and confirmation of accuracy, as well as to obtain their approval for further analysis. The transcribed interviews were then thematically categorized and compared, as they were deconstructed and analyzed (Stock, 1994). Data deconstruction is an essential component to the data analysis process, as it aids in data interpretation, relates data to research themes, and assists identifying the purpose and objectives of the project (Auerbach & Silverstein, 2003; Burman & MacLure, 2005; Guetzkow, 1950; He, 2012).

A myriad of different themes emerged throughout the interview process; some were anticipated, others were unexpected, and several were tangential to this study. In many circumstances, themes emerged in the absence of probing by the researcher. In successional interviews, several of these unexpected emerging themes were probed for in order to reach more diverse conclusions.

Anytime certain topics, words, phrases, or experiences were expressed in separate interviews, they were recorded to determine if they maintained significance amongst other participants. Themes were initially differentiated in the literature through colour-coding. Colour coding has been shown to allow for more effective segregation between terms and concepts (Yeh & Wickens, 2001). For example, once “fear reduction as a result of the expedition” had been identified as a potential theme, each interview was carefully examined for links to fear reduction. If identified in four or more other interviews (see Table 2 below), the transcribed lines regarding “fear reduction” would be coded in a specific colour in order to differentiate that particular theme from the rest of the transcribed interview(s). The same colours were used for matching

themes between interviews, in order to maintain consistency. Research shows that well organized colour coding can shorten search time considerably, which is beneficial during the data assimilation process (Smith, 1962). Some of the themes that were originally recorded were omitted from the list, in order to focus more specifically on themes that maintain the highest relevance to the questions in this study.

Ethical Considerations

This research involved human subjects, who created the requirement for a number of ethical considerations that were included in the planning process (Canadian Institute of Health Research, 2010). Firstly, written consent of the participants was obtained in order to proceed with interviews. In several circumstances, verbal consent was additionally obtained. It was also imperative to maintain the anonymity and confidentiality of participants, which provided security for both the participants, as well as for the researcher (Corbin & Morse, 2003). Participants were provided with a description of the research project, to ensure they maintained a thorough understanding of the final project, and had been informed of their role within the research. Anonymity and confidentiality has been assured for the participants of the study, throughout the research process, and will continue throughout any subsequent publications. Information acquired through interviews, including audio recordings, has been stored in a secure manner throughout the data analysis process, and will be destroyed in five years as required by Lakehead University ethical procedures.

In order to proceed with this research study, an approval from the Lakehead University Research Ethics Board (REB) was acquired. An additional approval was required with regard to

the interview process specifically (Lakehead University, 2014). This involved submitting documentation to the REB, with specific regard to interview planning, including a careful examination of the interview questions by the REB. The approval process is in accordance with the Tri Council Policy Statement 2 for Ethical Conduct for Research Involving Humans (Tri-Council Policy Statement, 2010).

Additionally, in order to conduct research with Outward Bound Canada, a research proposal was submitted to OBC explaining research goals and interview intentions. OBC approved this proposal, allowing for the interview process, amongst individuals who had previously consented to have their contact information released should potential research arise.

CHAPTER 4

Results/Discussion

The data presented in this section, is a representation of the coded and interpreted interviews. The findings have been divided into various theme clusters, utilizing direct quotes wherever possible, to improve accuracy and organization throughout. In some circumstances, data was obtained during the interviews through the use of probing questions, which were useful in extracting additional information; however, these questions were not always synonymous throughout. Experiences and insights shared by participants throughout the interview process vastly improved the breadth of this study, as well as offered fundamental contributions to the results, with regard to how experience in natural areas can foster more powerful relationships with the land, as well as assist in developing a sense of environmental stewardship.

Many of the themes existing in Table 2 (see below) were present within the questions themselves (see Appendix C for interview questions). For example, the question "Is wilderness something you fear, why or why not?" introduces "fear" as a topic of discussion. Many of the participants discussed, in response to this question, that as a result of the OBC expedition, their fear of natural areas declined. The idea of "fear reduction" became an apparent theme as it reoccurred. Some potential themes however, were omitted if they were not discussed in a relevant or reoccurring manner. For example, the sub-question "What did you expect to learn before the trip began?" could have yielded a theme, had any of the participants discussed their desire to learn more about the natural environment or their willingness to become more sustainable; however, this type of answer was not reported. As a result, after thorough investigation, this question was dismissed of producing any critical themes. Conversely, as a

result of a more vigilant deconstruction of the data, other themes emerged. For example the topic of "transcendent experiences" was not probed for in the questions; however, many of the participants elaborated on expedition-based events, elucidating situations that met the criteria of a theme, therefore it was included into the results as a discussion point.

Table 2 provides a visual portrayal of the relevant themes that were documented throughout and/or following the interview process. These themes were chosen as they relate directly to the primary constituents of this study. Themes regarding topics such as stewardship, environmental commitment, newly formed connections or attachments to nature, as well as any additional factors that may increase the likelihood of a participant returning to isolated natural areas, appear in Table 2. Furthermore, Table 2 displays information such as whether participants had previously participated in an expedition as isolated as their OBC experience, and whether this expedition was the most meaningful natural involvement experienced to date.

The numbers across the top of Table 2 represent the nine participants who were involved in the study. Pseudonyms were used to represent participants while maintaining their anonymity. The 13 themes located down the side of the table are the themes/topics that were most notably addressed and relevant throughout the interview process. The "Xs" indicate that a participant discussed a given theme/topic during their respective interview.

	#1 Sam	#2 Amanda	#3 Kathy	#4 Mary	#5 Chris	#6 James	#7 Conner	#8 Jake	#9 Will
Fear Reduction (Increased Confidence)	X	X		X		X	X	X	X
Willingness to continue visiting natural areas	X	X	X	X	X	X	X	X	X
Consideration for environmental employment or volunteer opportunities (environmental advocacy)	X	X	X	X	X	X	X	X	
Increased connection with the natural environment (Deeper Connections)	X	X	X	X	X	X	X	X	X
Increased Environmental understanding		X		X	X	X	X	X	X
Withdrawal from nature (upon commencing expedition)					X	X		X	X
Transcendent Experience			X		X	X	X	X	X
Desire to expose children to natural areas	X					X	X	X	
Most meaningful natural experience to date		X	X	X	X	X	X	X	X
Most remote "wilderness" experienced to date	X	X	X	X	X	X		X	X
Fear loss of natural areas	X			X	X	X	X		
Absence of Technology	X		X	X	X				

Table 2. Summary of Themes that Emerged through Interview Process

Table 2 was generated to obtain a visual interpretation of the data, as well as to assist in the organization of the results. The following section provides rationale and an interpretation of the results. In order to maintain organization and connectivity throughout the results, some of the themes present in Table 2 have been amalgamated under the following clusters: Initial Interest to Participate, Remote and Meaningful, Deepening Connections/Increased Environmental Understanding, Stewardship, Fear of Nature Itself, Withdrawal from Nature: Escape from Technology, A Return to Nature, The Greater Picture, and Limitations. In order to link and compare these clustered themes effectively, the order that they appear in the following section does not reflect the order they appear in Table 2. The themes that are discussed throughout each cluster of data are listed in brackets beside each cluster, when necessary. Prior to discussing the themes, a brief discussion has been provided on why the participants enrolled in an OBC course.

Initial Interest to Participate

While 'Initial Interest to Participate' is not a theme, it is important to include in the forefront of the results, as it may eliminate bias, and provide participant rationale for initially participating in an OBC expedition. One of the questions asked during the interview, "Why did you initially decide to partake in this trip?" was a critical point of consideration for this research, since if a participant's intention were to become more closely connected with the natural environment, learn about stewardship, or expand their ecological knowledge, that degree of bias would be included in the results. The trip however, was not designed to educate directly on such topics, and therefore, the participants discussed additional motivations driving them to participate. Kathy stated, "I wanted to be sleeping on the mountain; I wanted to be energetically

connected to the mountain for a week." Amanda discussed, "Basically I wanted something that would get me out of my comfort zone, and I really wanted to have an adventure and just go outside, travel, and grow my communication skills, self-perception, and self-confidence." Sam maintained similar motivations to participate,

> I decided to [participate] because it seemed sort of hard-core and I thought it would be a really good time in my life to do something quite challenging; something to take me out of my comfort zone, so that I could just…get a different perspective on my life.

Other participants discussed motivations to participate that ranged from professional development, a sponsored educational opportunity, to having been gifted the trip. With an improved understanding of the participant's initial interest to participate, the discussion will be turned to the cluster titled Remote and Meaningful (Most Meaningful Natural Experience to Date, Most "Wilderness" Experience to Date, and Transcendent Experiences).

Remote and Meaningful *(Most Meaningful Natural Experience to Date, Most "Wilderness"Experience to Date, and Transcendent Experiences)*

"There was just a mist, all out over this lake, and you could just see sort of like these vortexes—almost like little whirlpools within the mist. It was brilliant. So that's one thing that will stick with me."—Jake

Perhaps one of the most important intricacies in the fostering of stewardship is developing lasting attachments to a place, setting, or feeling that resonates with an individual and extends into the future (Williams, Patterson, Roggenbuck & Watson, 1992). Participants were

asked if their OBC experience was the most meaningful natural involvement that they had experienced to date. All but one of the participants affirmed this; and all but one participant claimed it had been the most remote expedition they had ever experienced. Interpretations of the term "meaningful" may vary; however, this ambiguity and lack of description from the researcher allowed for the participants to reflect on what was a defining experience for them personally. James stated "I've been on quite a few other trips, but with this one I felt that we got into the environment. I thought about my surroundings more than I ever probably have; I was probably at one with the environment more than I ever have been."

One theme that emerged throughout the first several interviews, which was probed for in the latter, was the idea of transcendent experiences. Williams & Harvey (2001) explain that a transcendent experience tends to possess specific attributes, such as "sense of union and timelessness, and broader appraisal dimensions such as complexity, novelty and causality" (p.249). Selhub & Logan (2014) describe transcendent experiences as "unforgettable moments of extreme happiness, of attunement to that outside the self, and moments that are ultimately perceived as very important to the individual" (p.18). This type of experience is imperative to document in this study, since these moments of clarity remain in the memory, and could heavily impact whether an individual repeats similar expeditions again. Six of the participants identified a moment on their expedition that would fit into this classification. For example, Kathy illustrated,

> I actually did a little stroll, and I came upon a huge bull moose lying down by his watering hole, hanging out in the sun. And so I immediately dropped to my knees when I saw him and just sort of sat beside this little tree. I sat with him for my time, and it was so beautiful. He would take a little drink and he was just enjoying his little watering hole in

> the sun and it was beautiful. It so impacted me…I've looked up Bull Moose energy as a totem—the whole thing, because it was so beautiful. So that for me was amazing. I've seen moose in the wild, and I've had one walk just across the river behind my canoe through a park before, but this was just way more intimate. It was incredible.

This unprompted experience, occurring while Kathy was independently hiking, demonstrates the powerful connections that can be formed while alone in a natural environment. Perhaps it is these moments of clarity that make an experience meaningful. Others discussed similar experiences; James for example, when asked of any exceptional occurrences stated,

> There were so many; there were just too many. Just sitting in the canoe and you just look around at the scenery would just be absolutely amazing. There was this one place called Bald Eagle Cliff—I think it's called—and it was the most amazing thing. It was so high and it made me feel very insignificant in the world. For me it was like 'okay I'm just a small part of this world and this area; there is so much more to it than me being here.' That was the moment when we were just floating down the rapids and it was just taking us down, and that big cliff just made us all realize that we were all very insignificant.

Will referenced an outstanding experience that he had on trip,

> I had these really vivid dreams—really particular. I just felt like the weight of where I was; the land and everything was just feeling sort of real. Out of all my attachment and all of my emotional spiritual stuff that I referenced, this was the peak of it all on this one night. In the morning I just was really reflective…Thinking about it in the morning just sort of had this real emotional impact on me.

Studies have shown that most commonly, forests are understood to be most heavily valued for economic support, and for ecological diversity (Schroeder, 1992). More recently, another value has been associated with forests, which is analogous in importance: the spiritual value of forests. Science once rejected the idea of spiritual experiences in nature, since the concept was conceptualized through a supernatural lens; the two however, are not synonymous. "Spiritual refers to the experience of being related to or in touch with an 'other' that transcends one's individual sense of self and gives meaning to one's life at a deeper than intellectual level" (Schroeder, 1992 p. 25). From a psychological vantage point of "spiritual", natural areas are often associated with this type of experience (Selhub et al., 2014). As demonstrated by participants in this study, spiritual connections have potential to be the strongest ties that an individual forms in bonding with a natural area.

Each participant, as a component of their expedition with OBC, spent 24 hours in the wilds independently. This solo experience had a sizable impact on many of the individuals in this study. In several instances, the participants identified at least one life changing realization, event or incident that occurred during their expedition, which they would always remember. Conner, with regard to his solo experience, stated,

> I think the 24-hour solo was a profound experience. Twenty-four hours of being alone with your thoughts. That was a profound experience, because I had never done anything like that before. I think it has changed me. The whole experience I think has changed me; I'm much more relaxed about things. I don't know if that will last, but already I'm four weeks into term and I'm snowed on with work at the moment, but I'm viewing it in a different way; I'm not getting as stressed as I would have in the past, so I think the whole experience has changed me profoundly.

This type of response demonstrates that solitude in a natural environment can have a profound effect on the participants' long and short-term perspectives. Solo excursions are said to provide additional benefits. Studies reflecting on solo wilderness experience, explain that solo trips have long been practiced in various religions and cultures, as a method for restoring a sense of self-worth, developing skills, enhancing personal growth, and fending off symptoms of mental illnesses (Angell, 1994; Maller, Townsend, Pryor, Brown, & St Leger, 2006). As outlined in the literature review, the many positive physical, cognitive, and perspective-based constituents present in nature might have been a contributing factor to experiences such as this one. Through the documentation of experiences such as these, it becomes apparent that perhaps one of the most effective methods of reconnecting people with nature is to expose them to isolated areas, and allow them to reflect and establish a sense of wonder in that location. If more people had experiences such as these in natural environments, perhaps more people would travel to remote natural areas and become advocates for their protection, should any action jeopardize the integrity of that, or other natural areas.

In some instances, the participants spoke of the intimate and powerful relationships they shared with other people in their group throughout the expedition. Chris, reflecting on his experience stated, "I was…to the point where the relationships I had on the trip were the only relationships that I thought mattered, because they were the only ones who had experienced it with me." According to the Canadian Parks Council (2014) nature plays a pivotal role in nurturing relationships, providing a foundation for social cohesion, and helps foster creativity in both children and adults. "Adults that participate in group outdoor experiences have shown enhanced abilities to connect with others that carry over into their personal lives" (Canadian

Parks Council, 2014, p. 20). The participants in this study have supported these claims and more, through the descriptions of their own experiences.

Deepening Connections/Increased Environmental Understanding

Natural areas and the endless interactions occurring within are difficult to conceptualize, recognize, and comprehend as a network of complicated systems if a person has not received exposure to such regions (Cohen & Harel, 2007). During the interviews, participants were asked whether they felt they had developed deeper connections with the natural environment as a result of their expedition. Although once again left up to the participant to delineate and interpret "deeper connections", it was a positive method in eliciting further conversation and more elaborate input from each interviewee. Each participant reported having developed deeper connections with the natural environment as a result of the OBC expedition.

The development of deeper connections with the natural environment was represented throughout the interviews in various ways, such as spiritual, ecological, and spacial connectedness. It was common for the participants to discuss the establishment of environmental awareness or familiarity that they developed throughout the trip. Among these, species identification was a common discussion point during the interviews, as was the freedom to drink water straight from the source (e.g., streams, lakes, and springs). Will, for example explained that he gained more of an appreciation for nature through the connections he established,

> "For me it's an appreciation with, a connection with—rather than just an understanding of…being in that environment, being in that space. It almost felt like it had a presence in a way, or an effect on me in a way I didn't think it would."

It seems that the expeditions were more meaningful in some cases, or impacted participants more significantly than they had initially thought they would. Chris, recollecting on his connections stated,

> It's all been here long, long, long before us, and it's going to be here long, long, long after us and yeah—if you're feeling exhausted, just take a deep breath and get energy from the surroundings …that struck a note a little; I retained that.

James discussed how his connectedness altered his perspectives on land use,

> If I now went camping, I would be completely different than if I had camped before this trip; I would take much more care of it…Maybe only small things, but if you add them all together I think it would make a big difference.

Research shows that awareness of the powers of nature, landscape expansiveness, positive interpersonal interactions, and complete immersion in a wilderness setting can invoke spiritual inspiration (Fredrickson & Anderson, 1999). Not only did the experiences engendered among participants invoke different types of connections, but also they triggered their desire to return to natural areas. Based on participant responses to whether they felt they had developed deeper connections with the natural environment, it is fairly clear that a sense of stewardship was established through contact with the natural environment. In some cases, these connections provided the participants with alternative perspectives and realizations, as seen with Will, whereas James seemed to connect with his surroundings enough to identify how he would mitigate his degrading actions on future nature-based expeditions.

Stewardship *(Considerations for environmental employment or volunteer opportunities, fear of losing natural areas, and the desire to expose children to natural areas)*

As previously defined, the term stewardship is defined as, "Conserving, restoring and enhancing ecological and cultural resources, and maintaining biological diversity in representative, significant, and formally protected areas of land and water" (Canadian Parks Council, 2014, p. 34). The definition of stewardship implies the requirement for action, which extends beyond the attachment and connectedness an individual shares with natural areas. For this reason, one of the questions each participant was asked was, would they consider employment or volunteer opportunities that involve environmental conservation, preservation, sustainability, or education as a result of their experience on their OBC expedition? Seven of the nine participants verified their interest in environmental volunteer or employment initiatives, many of which had been in the process of actively searching out various opportunities prior to their interview. Mary said she had been re-evaluating her current profession as a civil engineer, as she would prefer the opportunity to work in nature, or at least "help preserve it directly, rather than in an indirect way." Will was the only person to presently maintain employment within an environmentally aware organization; therefore the trip had not changed his perspective as much as it reinforced his willingness to continue his environmental advocacy. James and Will discussed their willingness to specifically protect the areas they had experienced through their expedition, should environmentally degrading activities commence in those regions. Conner explained,

> "I'd certainly be more—not militant but more interested in protecting areas such as that area in Quebec if there was some threat. It has changed my perspective; I suppose it must,

> spending two weeks canoeing down a river. We would have to take action if it was under threat."

Will also demonstrated concern for the well-being of the natural region he visited; however, he further elaborated with regard to how the trip altered his overall perspective.

> I would want to protect it; I think I would feel more emotionally, spiritually even, maybe attached to any sort of attack on that sort of environment, or if it were to be jeopardized in any way; if the government said "we're going to start drilling in there, or build houses"— I would probably more so having experienced it, feel like that's something I would want to try and fight against. I think especially the area that I was in, but I think our environment as a whole across the country or even globally. I think it definitely gave me more of an appreciation for that in general.

Perhaps many people possess the desire to be environmentally benevolent, although they require some sort of motivation to actually engage with the idea. For example, Amanda shared, "I've always wanted to pursue a career with the environment, but I think just going on the trip—that reinforced it a lot more…I think just going on the trip was a reinforcement of my general interest for the environment."

One of the reoccurring mentalities that emerged through the interview process reflects on how it did not seem to matter to most of the participants where they would be improving/preserving the natural environment through their intended future environmental commitment, as long as they were making a difference on some level. This is positive with regard to environmental commitment, especially as many of the participants developed advocacy and stewardship goals simply from receiving exposure to natural areas. According to a study by

Ryan, Kaplan, & Grese (2001) volunteers of environmental stewardship programs indicated many significant changes in their environmental outlook and actions during their involvement in stewardship activities. Their study suggests that, "stewardship programs that consider volunteers' changing motivations at different stages of their participation can effectively nurture personal growth while fostering a powerful constituency for the environment among their volunteers" (p. 629); this suggests that exposure to natural features has the ability to foster a nurturing for those, or other natural features.

As aforementioned, in several instances the participants seemed to conceptualize and consider the impacts of their actions, and approach of stewardship or environmental commitment with forethought, carefully considering the future. As illustrated by James, "I'd be devastated if my child or my grandchild couldn't experience a trip like I experienced because those areas are not there anymore or, you know, they've been changed completely." James, a teacher by profession, discussed how throughout the expedition he had pondered different ways that he could become involved with environmental volunteer opportunities, as well as assist with exposing more children to natural areas; opportunities that he mentioned he would not have considered in advance of the trip.

Stewardship requires the psychological willingness for action in order to create real change (Canadian Parks Council, 2014). Although this study does not provide a follow-up on the participants to report on whether or not they ultimately took action for an environmental cause, it does show that the experiences the participants procured in nature created a sense of stewardship, which could be easily generated into action. The aforementioned interview question regarding whether participants would consider environmentally beneficial employment or volunteer initiatives, is foundational for this research, in terms of answering the research question of this

thesis: Does experience in nature foster a sense of environmental stewardship and connection to nature?

Fear of Nature Itself *(Fear Reduction as a result of the Expedition)*

Is it likely that people will visit natural areas if they are afraid to go? Whatever the fear is based around, be it illogical, perceived or actual, if it is inhibiting visitation to natural areas, it is problematic. As discussed in previous chapters, Canada is undergoing many social and cultural alterations, which as a result has shifted several core nature-based perspectives that Canadians once maintained (Manning, 2011; Wilson, 1991). Perhaps exposure to natural areas will create attachment, love, and ultimately stewardship towards natural environments; however, if people are in fear of spending time in such areas, how can their fears be mitigated?

One of the questions that participants were asked during the interview was whether wilderness is something they fear, and whether the trip had altered this perspective. Seven out of the nine participants reported feeling illogical fear in advance of the trip, which they interpreted as illogical once they were immersed in the natural areas. The concept of illogical fear shared a close connection with the idea of "fear of the unknown". Since many of the participants had never been exposed to natural areas within such an isolated context, the idea of it was far more intimidating than the actual experience. Seven of the nine participants reported significant fear reduction with regard to the visitation of natural areas, after they participated in the expedition. Sam shares her post-trip perspective,

> For one thing it's the unknown and another thing is I was really fixated on the concept of grizzly bears and cougars, as were many participants in my group [who] were really

> almost obsessed with the fear of bears and cougars attacking and killing us. There was no real logic for it. Once I took the bears and the cougars out of the equation, there's really nothing to fear. But again, it was the concept of the unknown; no civilization, no electricity, no lights, no people around you, and it actually turned out to be the best part of it, because you just become completely detached from all of that crap. So yes, I think I was quite fearful before I went. And that having done especially the solo, I do not fear it at all anymore.

Of the seven people who reported fear reduction as a result of the expedition, the majority of them said the fears that they possessed in advance of the trip were illogical fears based on perceived risks. Those who did not directly indicate a reduction of fear as a result of the trip, were those who more frequently visit natural areas; therefore, their previous experience in natural areas provided them with a theoretical security blanket of knowledge for future endeavours. James shared his perspective,

> Well, if I can do this, then there is nothing to worry about here. A few days into the trip, I think that all my apprehensions had completely gone. So yeah, I maybe had a slight apprehension with the wilderness before I went, but now I would happily be plunked most places, I think, and give it a good go."

Similarly, Amanda shared, "I think the way the course was taught, it made me feel more comfortable being out in the wilderness. So I would say now that I don't fear wilderness—compared to how I felt at the beginning."

Scientific literature reinforces the notion that natural areas have the ability to reduce fears, anxieties, and stresses in humans (Ulrich, 1993). In many studies, the primary focus is

based on how natural environments can reduce the negative effects associated with living in urban environments; however, exposing one's self to a natural environment has the ability to reduce fear and anxiety levels of a person in that particular environment (Ressler, 2010). Although urban environments produce many negative cognitive stimuli, many people feel a sense of security in urban environments, just as many people share the perspective that natural environments are of a higher risk to self than urban areas (Schroeder, & Anderson, 1984). Nature does, however, have subconscious impacts on a person's sense of security. A study conducted by Kuo, Bacaicoa, and Sullivan (1988) shows that in urban areas where tree density and long grass was more abundant in close proximity to residential areas, people not only preferred the situation aesthetically, but they reported feeling safer. Many similar studies have been conducted that have reflected similar results. People perceive cityscapes to be much safer with an abundance of parks, mature trees, and other forms of greenery (Jorgensen, Hitchmough, & Calvert, 2002; Lohr, Pearson-Mims, Tarnai, & Dillman, 2004).

Perhaps if greening initiatives within cities can trigger an increased level of appreciation for nature amongst urbanites, there will be an increased level of confidence towards such areas and thus an influx of people visiting more remote natural locations. This raises the question: Is it more effective to slowly introduce people to natural areas beginning with the areas surrounding their home, or is full natural immersion more effective in creating the most meaningful/powerful attachments and appreciation? A document by Canadian Parks Council (2014) explains that Canada spends $13 billion annually in policing and other criminal justice services. They elaborate on how active and cohesive neighbourhoods can act as a deterrent to crime. "Neighbourhood green spaces, small or large, can help foster the family and community bonds that lead to social cohesion…with approximately 8 in 10 Canadians living in cities, the first

connection with the natural world needs to occur where people live" (Canadian Parks Council, 2014, p. 20).

Withdrawal from Nature: Escape from Technology *(Absence of Technology, Withdrawal from Nature)*

As discussed in the literature review, there are many benefits associated with exposing humans to natural environments, likely a direct result that humans evolved alongside the countless interacting entities and features within the natural world (Lohr, 2007; New, Cosmides, & Tooby, 2007; Selhub et al., 2014). Ironically, within urban environments, pharmaceutical drug use has increased exponentially to address mental ailments such as depression, anxiety, and attention deficit disorders (Naish, 2009). As outlined in the literature review, the use and dependence on these drugs is expected to increase, as is the percentage of people residing in urban settings (Selhub et al., 2014). This information is relevant, as four of the nine participants interviewed for this study discussed a withdrawal from the natural environment, upon returning to the city or "daily grind". Chris shared his experience,

> When I arrived back from Outward Bound I had probably two weeks where I didn't turn the TV on, and I just felt everything was—I can't really think of a word without swearing. I just wanted to be outside when I got back and I was questioning everything from my relationships with people to I don't know what. I just wanted to put everything on my back and just go somewhere; so that was quite a struggle.

This theme was not initially anticipated in the interviews; however, since it surfaced, it became part of a question in later interviews. Research shows that exposure to natural environments has the same influence and chemical release in the brain that antidepressants and

other medications attempt to mimic (Di Carlo, Borrelli, Ernst, & Izzo, 2001). The concept of nature withdrawal does not seem to be outside of the realm of possible, since so many senses and areas of the brain are in operation within natural surroundings, which are underutilized in urban settings (Kim, Jeong, Baek, Kim, Sundaram, Kang, & Song, 2010; Laumann, Gärling, & Stormark, 2003; Park, Tsunetsugu, Kasetani, Morikawa, Kagawa, & Miyazaki, 2009). Since these benefits that are procured within natural environments often engender pleasing and sedating effects, it seems that the participants who reported feeling withdrawn from their environment upon returning, were once again in a state of under-stimulation, in the absence of naturally occurring positive mood elixirs. The participants, who reported feeling this withdrawal from nature, indicated that such emotions inspired their willingness to return back to the natural surroundings that offered them cathartic release, in order to resurrect positive emotion.

Furthermore, while on the topic of withdrawal from natural areas upon returning from the expedition, it is important to note that there was an absence of complaints regarding the lack of technology, or a withdrawal from urban life, during participant time on the trip. Sam, Kathy, Mary, and Chris all noted the absence of technology while on the expedition during their interviews. The absence of technology was not addressed in any way by the researcher during the interviews, but it continued to arise as a theme. There has been a proliferation of research dedicated to identifying the negative outcomes of digital media on the brain; the results often portray technological attachment in an unfavourable light. Studies are showing that electronic media could be contributing to various mental illnesses, as well as reducing effective learning outcomes in classrooms (David-Ferdon & Hertz, 2007; Meyrowitz, 1985). Research is showing that the increasing ubiquity of technology has assisted in creating endemic social change, often perceived to be negative (Meyrowitz, 1985; Selhub et al., 2014). The participants who discussed

the absence of technology voiced their satisfaction with the disconnection. Sam shared her insight, "No lights, no people around you, and it actually turned out to be the best part of it, because you just become completely detached from all of that crap." Kathy also shared he judgments on the matter, "When we were there, we were off the grid…So I didn't have my phone with me—nothing. That's the other piece that's really critical, because when you're in these parks and enjoying, it's about keeping that technology away." Mary discussed her perspective on technology, and raises an interesting idea; people don't recognize their reliance on technology until they disconnect from it.

> When I was coming back into the airport, into the city…you look around and everyone is looking at their cell phone—so I feel like it's easiest to connect to people when you're out there [in nature] and you're not bombarded with technology. I think that people that live in the city—that there is a disconnect, and sometimes it's when you don't know it exists, when you're not aware of the disconnect, it's easy for you to not think about it and not care."

This quote provides more insight into the impact natural areas can have on urban perspectives. In Mary's case, immersion in nature allowed her to disconnect from electronic media, and provided her with an alternative perspective on technology upon returning to the city. Perhaps if more people were exposed to isolated natural areas, then more people would acknowledge the value in being disconnected from electronic entertainment, such as social media, video games, and Internet use, which was the case with Chris. Chris, upon returning to the city shared how he fared, "usually I would play X-Box or something for a few hours, or play guitar and stuff—but I just wanted to be outside when I got back…I just wanted to put everything on my back and go somewhere. So that was quite a struggle." Although a segment of

this quote was used above regarding his withdrawal from natural areas, it is important to consider how not only was Chris invigorated and inspired by his expedition, but he was disappointed with the state of typical living upon return,

> I was un-respondent to things we used to do, like getting a coffee...Walking down and getting a coffee was just frustrating—so simple to do…I saw it as an urbanized thing… It's completely different; I was comparing life getting my water out of a stream to having power at your fingertips and having toilet paper and all those little things. So I would say that I did struggle with coming back to this world.

The impact that the OBC trip had on Chris was profound; however, many of the participants discussed feeling connections that were remarkable, while on the expedition. The trip presented itself as a revolutionary experience for many of the participants. If more people could experience natural areas, such as the ones OBC travels to, would there be a movement towards protecting the areas closest to cities, regardless of that land's value in a developed state?

A Return to Nature *(Willingness to continue visiting natural areas)*

Eight of the nine participants in this study confirmed that this was the most isolated, or influential wilderness they had experienced to date. All nine participants unanimously expressed their desire to continue to participate in expeditions resembling their OBC experience (independently or with an organization). Four of the participants discussed their desire to not only return to isolated natural areas themselves, but also the absolute requirement for their children to receive the opportunity to access and experience natural areas in the future. Even

participants who did not yet have kids discussed their desires for their future children to have access to analogous experiences to their own.

These findings signify that human exposure and experience in natural areas creates a willingness to return; however, does this also result in a willingness to protect natural areas? As aforementioned, eight of the nine participants involved in this study reported that they would be interested in, or had already begun seeking out employment or volunteer opportunities related to environmental awareness, education, or sustainability; a drive that had been exacerbated as a result of their expedition. Although this study does not provide results for whether these positions will be pursued, these results insinuate that the concept and sense of environmental stewardship has been conceived as a result of nature-based experience.

Perhaps if more people were able to have similar experiences within natural areas as the participants in this study, more parkland would be set aside to accommodate the demand. If this were the case, as a result of increased experience and continued use, people would be benefiting conservation efforts, whether it is inadvertent or intentionally.

Participants did, however, discuss other factors that could dictate their returning to natural areas that must be considered. Several of the participants identified various inhibitions with regard to their continuing this type of remote natural retreat. Amanda, Mary, and Will, who all reside in urban environments, discussed how they had minimal opportunity to return to such isolated settings, since none of their peers possessed a common interest to reach such areas; to return to these areas solo was not of common interest to the participants in this study. Amanda stated, “I don’t know that many people who are both fit and just like going out in nature…so I’m just trying to find a group I can do that with—but I would definitely keep doing it.” Amanda and

Mary identified their solution to this, which was to frequently visit natural areas in close proximity to their homes, with the desire to continue participating in OBC trips, in the presence of experienced leaders.

The Greater Picture

With regard to the aforementioned results, it is clear that participating in a wilderness-based OBC expedition had a profound impact on the perspectives of the individuals involved in this study. The experiences, insight, and knowledge elicited through the interviews, procured through each respective expedition, seemed to restructure the manner in which participants interpreted their surroundings, advanced their comfort levels in natural areas, adapted their values, and in two instances, caused them to question their current employment situation. For the majority of the participants, the trip also augmented naturalistic understanding, increased the level of connectivity with their surroundings, inspired the will to participate in employment or volunteer initiatives to improve the state of the environment, and created a desire among participants to continue utilizing natural areas.

As discussed, several of the participants had been actively seeking out opportunities to become involved with environmental initiatives in advance of their interviews, indicating that stewardship, for some of the participants, was reasonably inevitable. As conveyed during the interviews, the respective expeditions provided as a catalyst to pursue environmental/ecological involvement. Perhaps once involved in a stewardship-based initiative, participants would find themselves actively seeking out further exposure, experience, or nature-based activities and pursuits, contributing to additional interest and environmental remediation efforts.

Limitations

Of the 26 people contacted to participate in this study, only nine wished to participate. Had more interviews been procured, there would have been an increased level of diversity and further data to work with. Thankfully, saturation was reached within the interviews that were recorded.

This research project has been subject to several limitations that have possibly restricted the breadth of the data collected. Since there is insubstantial research published on this topic, this study alone will not provide universal conclusions regarding the impacts of nature exposure on humans; however, it retains the potential to function as a resource and placeholder for future research. Additionally, this study does not include follow-up interviews to determine whether the resulting "sense of stewardship" that emerged post-trip had become legitimate stewardship through action, and not simply ephemeral emotion. However, as aforementioned, several of the participants had already begun taking action by the time of the interview.

Additionally, it is likely that the perspectives of individuals who were eligible, willing, and capable of partaking in a wilderness expedition exceeding one week in duration, are not representative of most Canadians. Although this study included people from a broad array of backgrounds, they all share the commonality of willingly enlisting to participate in an expedition. Perhaps their respective perspectives, revelations, and ideas, regarding stewardship, that emerged post-trip were supported and structured around the fact that they willingly enlisted in the program. Conceivably, if an expedition were compulsory for a particular group of people who genuinely wished not to participate, there would have been less enthusiastic results post-trip. However, as referenced in Chapter 2, research has shown that there have been notable

psychological improvements amongst individuals who have faced compulsory wilderness isolation, although there are few documented psychological alterations with regard to stewardship (Butler, 2008). Studies do however show, as referenced in Chapter 2, that compulsory wilderness exposure (rehabilitation) is capable of dramatically improving the perspectives and attitudes of the participants involved.

CHAPTER 5

Conclusion

Humans become attached to things of endless description and have a propensity to protect the things with which they have become attached to (Devine-Wright, Howes, 2010). This is often the case with place-based exposure with specific regard to locations, or attachment to place (Hidalgo & Hernandez, 2001). The ultimate goal of this research was to identify whether direct exposure to natural areas can foster a sense of environmental stewardship. This involved extensive research into the documented effects that specific constituents present in natural areas can have on human psychology. There is much research that elucidates on how human exposure to natural areas can alter mental perspectives (Alvarsson et al., 2010), regulate mood (Bowler et al., 2010), stimulate attention (Berto et al., 2005), reduce symptoms of mental illness (Chang et al., 2006), improve immune function (Holick, 2011), increase pain thresholds (Mead, 2008), replace the use of pharmaceuticals in varying types of medical patients (Phillips, 2011; Ulrich, 1981), reduce risks of certain cancers (Kobayashi et al., 2009), stimulate brain connections (Kawai et al., 1997), and in some a cases increase a person's willingness to learn more about areas they have been exposed to (Kellert, 1993; Selhub et al., 2014). However, although heavily hypothesized, there are few studies that measure whether experiences acquired in natural environments can have a positive impact on environmental stewardship.

The interviews conducted for this study facilitated a broad range of responses. Many of the participants shared analogous perspectives to one another, offering a reduced research saturation point than what was originally anticipated. The participants of three different Outward Bound Canada (OBC) expeditions discussed dramatic changes in their perspectives during and

upon returning from the trips. Increased environmental understanding, the desire to contribute to environmental efforts, reduced levels of fear while in natural areas, and the desire to conserve natural environments for future generations were reoccurring themes that arose through the interview process.

The research question aims to address whether or not exposure to natural areas can foster a "sense" of stewardship, since it is difficult to measure whether legitimate action will be the result of such exposure, in the absence of long-term follow-up interviews. However, as discussed in Chapter Four, several of the participants had been actively seeking out opportunities to become involved with environmental initiatives in advance of their interview, indicating that stewardship, for some of the participants, was quite inevitable. As reported during the interviews, the respective expeditions provided as a catalyst to pursue environmental/ecological involvement. Perhaps once involved in a stewardship-based initiative, participants would find themselves actively seeking out further exposure, experience, or nature-based activities and pursuits, contributing to additional interest and environmental remediation efforts. This is another inextricable area of focus for further research.

It is critical to construct a foundation of research in this area of study, and related fields at the present time, since humans are increasingly residing within urban areas, which is dramatically exacerbating an ostensible bifurcation between humans and nature (Chui, 2007; Grimm et al., 2008). Pervasive documentation affirms that contact with natural environments can instigate extensive benefits for humans, mitigating many negative characteristics representative of and procured through urban living (Selhub et al., 2014). Could regular connection with natural environments reconnect people with said environments? Could this reconnection between humans and nature engender stewardship? Seemingly, yes, and perhaps the attachment will be

prolonged if the experiences adhere to specific criteria that maintain the potential to foster powerful connections in/with natural environments. Perhaps the answer to prolonged attachment is through frequent exposure to natural environments, acting as a renewal process each time a person visits. These questions, among others, could be the foundation for future research in this area of study.

There are many aspects of this research that could be central in further studies, in order to expand breadth, depth and gain broader understandings of which of the elements experienced during a nature-based expedition can foster the most powerful connections, resulting in stewardship. Additionally future studies could involve groups composed of participants who experienced an OBC expedition one year ago or longer, in order to establish whether the "sense of stewardship" observed in this study is ephemeral or concrete within a person's interest. Upon conducting follow-up interviews, Kellert (1998) found in his quantitative study measuring the impacts of wilderness experience on participant knowledge and perspectives, that many of the perspective-based characteristics reported shortly after the trip had dwindled with time. It would be beneficial to determine whether these results would be comparable in research utilizing qualitative methods, or if further rationale and reasoning from participants would elucidate a more multifaceted explanation for the perceived decline in interest. However, if the results of future studies show that the sense of stewardship dissipates over time, it is essential that an increased number of people be exposed to natural areas on a more recurrent basis. This would mandate knowledge on how to make natural areas more accessible to a greater number of people. As shown in this research, with exposure to natural areas, participants reported a diminution of fear within such environments, and identified a willingness to return. If natural areas were more

accessible, this would not only be conceivable, but perhaps it would perpetually extend the urge to participate in stewardship-based initiatives.

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APPENDICIES

Appendix A

Research Cover Letter

Dear Potential Participant,

You are being invited to participate in a research study. The cause I (Nicholas) am investigating serves as a life support system to humans and other life on planet earth. You are invited to take part in this research project, through the Masters of Environmental Studies, within the School of Outdoor Recreation, Parks and Tourism at Lakehead University. The intent of the project, entitled, *Assessing the Divide between Humans and the Natural World: Effects of Increased Experience in Natural Areas,* is to identify whether or not connections exist between human experiences in natural areas and increased levels of stewardship towards its preservation. This research, which addresses the above introductory questions, will conduct interviews with people like you who have recently participated in an Outward Bound Canada (OBC) wilderness experience program.

You are an ideal participant for this study since you will have recently participated in an OBC trip. Your participation would involve a telephone interview, of about 20 to 30 minutes, to identify any changes in your perspectives regarding the natural environment, which may have occurred as a result of your OBC trip.

Participation in this study is entirely voluntary; you may withdraw at any time and you do not have to answer any questions you do not wish to answer. Your responses will be kept confidential and anonymous through careful and procedural handling of information. If you do not wish to have your comments used in reports or publications, I will not use them, though you may still participate in the project. The interview will be tape recorded and transcribed. If you do not wish to be tape recorded, notes will be taken of the interview instead. A copy of your transcript or notes will be sent to you so that you may clarify, add or delete material. In addition to the completion of a Master's thesis, the information provided may be published and presented and disseminated at conferences and workshops. Additionally, if you wish, a copy of the final results will be sent to you.

Information from the interviews will be stored securely at Lakehead University for five years and then destroyed. No individual will be identified in any report of the results. Only myself and my supervisor Tom Potter will have access to the data. If you have any questions about the research, please feel free to contact me or my supervisor. This project has been reviewed and approved by the Lakehead University Research Ethics Board (LU REB). There are minimal foreseeable risks

associated with your participation in this research. If you have any concerns regarding the ethics of this project, please feel free to contact them at 807-343-8283.

Thank you very much for considering participating in this research study. Your contributions could assist in restructuring how North Americans view and value natural areas, and could make natural areas accessible to more people. If you wish to participate, please contact me by email or telephone.

Sincerely,

Nicholas Schwass

Masters of Environmental Studies-

Nature Based Recreation and Tourism Candidate

School of Outdoor Recreation, Parks, and Tourism.

T: (705)-875-6800

E-mail:nschwass@lakeheadu.ca

Dr. Tom Potter (Supervisor)

T: (807) 343-8843

E-mail: tpotter@lakeheadu.ca

Appendix B

Research Consent Form

By signing this document, you are acknowledging that you have read and understood the information letter, that you are indicating your willingness to participate in this study and that you understand and agree to the following conditions:

1. Your participation in this research is voluntary and that you are free to withdraw at any time.
2. You may choose not to answer any question without consequence.
3. You have the right to anonymity (Please indicate below).
4. You understand the potential risks and/or benefits of the study
5. You will have the opportunity to review the transcript of your interview to ensure accurate representation of your views.
6. The interview transcript in hard copy format will be returned to you.
7. The information you provide will be utilized to create documents for publication.
8. The electronic data generated from this research will be kept at Lakehead University for 5 years and then destroyed.
9. You will receive a copy of publications that may result from this research, if you wish.

Please check any that may apply:

I wish to remain anonymous in any publications. [ ]

I wish to be identified when my interview is quoted in publication. [ ]

I will allow for a voice recording of the interview [ ]

Name (print) Signature Date

Witness Name (print) Signature Date

Please feel free to contact me or my supervisor, Dr. Potter, with any concerns. We can be reached at:

Nicholas Schwass

Phone: 705-875-6800

E-mail: nschwass@lakeheadu.ca

Tom Potter

Phone: 807-343-8843

E-mail: tpotter@lakeheadu.ca

Appendix C

Telephone Interview Questions

PREAMBLE: Hello, this is Nicholas Schwass, Mater's candidate at Lakehead University. Thank-you for your willingness to participate; is it still a good time? To reiterate my email, I am conducting interviews with people who have recently participated in an Outward Bound Wilderness experience program. I am interested in finding out whether or not the trip influenced your perspectives on natural areas. This is a semi-structured interview, and I only have a few questions to ask of you, so this may resemble a conversation to some extent. If at any time you are uncomfortable with anything you may stop the interview, and if you do not want to answer a question, just let me know. Thank you for participating.

1) Besides the trip, do you spend time in natural areas? How often? For what duration?

a) Do you think you will continue to participate in trips resembling your recent OBC trip? Can you explain why or why not?

b) Is this OBC trip the most meaningful natural involvement you have experienced to date?

2) Why did you decide to partake in this trip?

    a) What did you expect to learn from this trip before it began?

3) As a result of your OBC trip, have your environmental understandings/perspectives changed? Can you explain in what way?

4) Do you feel you have developed deeper connections with the natural environment, as a result of this journey? Can you explain this?

5) Would you consider employment or volunteer opportunities that involve environmental: conservation, preservation, sustainability, or education, and has this changed as a result of this OBC trip?

6) Do you currently feel connected or detached from the natural environment and has the Outward Bound Canada trip altered your perspective? Explain.

7) Do you fear the loss of wilderness areas? Has the OBC trip changed this perspective?

8) Is wilderness something you fear? Why or why not? Has this changed since you participated in the trip?