

**Can mindfulness enhance connectedness with nature? The case of in-depth nature
experiences with adolescents**

by

Jake A. McCloskey

BA, Honours, Dalhousie University, 2013

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

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in the School of Environmental Studies

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Abstract:**Supervisory Committee**

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This thesis is an exploratory look into the use of mindfulness practice on in-depth nature experiences to determine if the practice has benefit to the participant, their outdoor experience, and overall connectedness with nature. An original research project examined three groups of adolescents from St. Michaels University School Outdoor Education program in Victoria, BC, Canada, as they hiked the Juan de Fuca trail. Two of the three groups undertook a simple mindfulness protocol to explore the outcomes. Based on participant-observation and interviews, mindfulness practice was determined to be a useful practice towards alleviating stress and anxiety associated with aspects of in-depth outdoor experiences, such as morning preparations. Participants who practiced mindfulness on the trip asked fewer questions about the future and remained present more often than those who did not practice mindfulness. A further finding was that there are aspects of mindfulness inherent in in-depth nature experiences, such as sitting around a fire. These inherent mindfulness moments should be encouraged as they provide benefit to trip experiences, and potentially towards greater connectedness with nature. Overall, this qualitative study suggests that mindfulness is a useful tool for the benefit of human well-being and nature connection. However, more research is needed to further identify the magnitude and mechanisms of the benefit.

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Definitions:

- **In-depth nature experience:** This type of nature experience is generally more intense than a walk in the park. Aspects that may be present in an in-depth nature experience are: moderate to high levels of difficulty (mentally and physically); active pursuits (e.g. hiking, canoing, ski-touring, etc.); remoteness (a backcountry trip rather than a frontcountry trip) and isolation (actual or perceived); and length of time away. In the outdoor industry, an in-depth nature experience is usually referred to as a *backcountry* trip (Okada, Okamura, & Zushi, 2013).
- **Backcountry:** An outdoor trip is considered backcountry if it takes place in a remote area, typically far from population centers.
- **Front country:** The opposite of a backcountry outdoor trip. A trip would be considered front country if it is near, or within, an urban or well-populated area.
- **Mindfulness:** "...the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment." (Kabat-Zinn, 2003, p. 145).
- **Subjective well-being (SWB):** A psychological understanding of happiness. SWB is a descriptor of one's quality of life encompassing emotional and cognitive elements. Aspects of life satisfaction and the quality and frequency of negative and positive affect are examined (Diener, 1984).

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Finally, I would be nowhere without the support of my family and friends. I promise to talk less about this research from now on. Mom, in particular, thank you for our conversations about my research and my passions. Gaby, thank you for pushing me to finish and to ignore that voice that says it isn't good enough.

Dedication:

I dedicate this thesis to my dog, Tsuga, without whom I would be less happy, have less mud on my clothing, and wouldn't explore the outdoors as often.

Chapter 1 – Introduction

1.1 My connection with nature

When I was in grade 11, I was given an opportunity to join the Outdoor Leadership course at my high school. I had to be talked into joining by the outdoor education department, as I was not inherently an “outdoorsy” person. Growing up, on family camping trips, I would often lose sleep, fearful of the outdoors and of ‘wilderness’. Perhaps the camping trip to Nitinat Lake when I was young during the salmon spawn, when the local black bears are more abundant and bolder than usual was to blame. We spent the night sleeping in the car after bears continued to walk through our camp. More likely, however, it was a fear of the unknown and unfamiliar that caused me to lose sleep. At the insistence of the outdoor education instructors and my friends who had joined the class, as well as with the prospect of earning a course credit, I joined Outdoor Leadership. That decision resulted in a significant shift in my life. My passions, personal identity, and eventual career path were influenced heavily by that decision.

At my high school, each student, from grades 8 to 11, must participate in a yearly five-day outdoor trip. Everyone is given a list of trip options and they select their top three, and they are eventually sorted into one of those trips. The options range from simple and comfortable (relatively) ‘frontcountry’ trips, such as day excursions to sample a variety of activities such as sailing, paddle boarding, and hiking, to more difficult trips like a rock climbing experience, to the most difficult ‘backcountry’ trips like hiking and sea kayaking. In grade 8 and 9 I chose surfing, where we spent almost as much time on the beach gossiping, at camp making hemp bracelets, and in Tofino visiting surf shops as we did in the water, learning to surf. In grade 10, I went on a tall ship to sail through the gulf islands around southern Vancouver Island. Both of these trips pushed my comfort level in that I was away from home for five days participating in

activities that were new to me, but those trips had comforts such as flush toilets, showers (surfing), and mattresses on which to sleep (tall ship). However, it was my trip in grade 11 that really put me out of my comfort zone and had an immense impact on me.

In order to participate in the Outdoor Leadership course, grade 11 students must participate on one of the 'try-out' trips. These trips are the most challenging and outdoor-focused. The choices were backpacking in an alpine setting, sea kayaking, and white-water kayaking. I chose backpacking. The trip took place in October in Cathedral Provincial Park, near Keremeos, BC. We carried in all of our gear in hiking backpacks, and set up a base camp in a wilderness campsite. Each day we summited a different nearby peak and explored the area, marvelling in the area's remoteness. It snowed on us half of the time, but we didn't care. No matter how difficult the climbs were, or how slippery the descents down snow-covered scree hills, we enjoyed all of it. That trip persuaded most of us to continue into the Outdoor Leadership course, to continue our experiences in the natural world.

From there, I participated in a winter camp experience while ski-touring in Manning Park, BC, and hiked the Juan de Fuca trail. In between trips we learned wilderness first aid and studied basic leadership and risk management scenarios. The course concluded with an exam that comprised of a final trip in our grade 12 year. We became the assistant guides on the outdoor trips that younger grades participated on. Again, I was placed in a hiking trip and we spent five days in Strathcona Provincial Park. All told, I had spent more concentrated time in the outdoors in a year than I had in my entire life. I became enthralled with the natural world, wanting to immerse myself in it whenever I could. I took up environmental causes, joining the E-Team at my school (Environment Team) and became vegetarian after learning the impact that a meat-filled diet has on the environment.

The outcomes of the Outdoor Leadership course were different for each participant. For some of my cohort, the course was nothing more than a unique way of gaining diversity in their university applications. For others, it was a fun series of adventures, or a challenge they overcame but wouldn't repeat, and for some, like myself, it was a jumping off point. I now work as an outdoor guide and outdoor educator for two high schools, and spent much of my undergraduate degree focusing on environmental issues in the field of International Development. My decision to pursue a master's degree in Environmental Studies can be traced to my experiences with Outdoor Leadership. I can say, with confidence, that I am not alone in this outcome. Perhaps I am at the more extreme end, but I have witnessed many students experience similar outcomes from these trips in my time as a participant and as an outdoor educator.

What was it about these trips that resulted in that shift in perspective and in my values? That is this question that initially led to my original thesis proposal. I wanted to study the impact that backcountry outdoor trips had on people, including any resulting environmental response, such as a desire to protect the natural world or act more sustainably.

My focus from that point changed, slightly, as often happens with thesis projects. This change came as a result of two things: firstly, my research during my time at Dalhousie University, where I completed my degree by examining the connection between access to green spaces and happiness (subjective well-being) in urban populations; and secondly, through the focus of my supervisor, Dr. James Rowe, who researches mindfulness, and in particular mindfulness and social movements (see: Rowe, 2015, 2017). The connection between mindfulness and happiness is relatively well studied (see: Brown & Kasser, 2005; Brown & Ryan, 2003; Collard, Avny, & Boniwell, 2008; Drake, Duncan, Sutherland, Abernethy, & Henry,

2008; Hollis-Walker & Colosimo, 2011), and this link between my previous studies and Dr. Rowe's research brought us together. In learning more about mindfulness, I came to see it as a potential tool for formulating a deeper connection with nature. I was not the first to come to this conclusion (see: Brown & Kasser, 2005; Ericson, Kjørstad, & Barstad, 2014; Trace, 2004), and one particular study by Valerie Nicholls and Tonia Gray (2007) helped to shape this thesis. In their study, the researchers lead an adventure therapy trip where participants began with negative or ambivalent attitudes towards the natural world (e.g., cursing the "fucking trees", or throwing insects into the fire). Over the course of the trip, the participants went through a shift in their attitudes, resulting in more positive associations with nature. The researchers attributed this result to direct experience in nature so that they could connect with the natural world, but also to the importance of "stillness" and "quiet time" experienced on the trip. Nicholls and Gray link these important features with the practice of mindfulness.

Upon further examination, it became clear that very little research had been done to formally tie these concepts together; to link mindfulness with nature connection in practice. However, if practitioners had begun to realize the potential benefit, then I saw it as an opportunity to further the state of information in these fields and to better understand the processes involved.

1.2 Why is this important?

There is a vast body of evidence suggesting that there is an ever-growing crisis of the global environment and of human health. For example, 2016 was the hottest recorded year since accurate recordings began in 1880, and is the third year in a row where record high global temperatures have been recorded (Potter, Cabbage, & McCarthy, 2017). The year 2017 was the

second hottest on record (Doyle, 2018). Oceans have begun to warm and sea levels continue to rise as a result (United States Environmental Protection Agency, 2017). Precipitation patterns are also changing due to climate change, causing heavier precipitation in some areas and drought in others (Trenberth, 2011). And ecosystems are under immense stress (Ericson et al., 2014). The deleterious effects of climate change are increasing and devastating. Many of the causes of current environmental crises are anthropocentric in nature. Human dependence on fossil fuels has released unprecedented quantities of greenhouse gases into the atmosphere (IPCC, 2014), and the extraction of natural resources has scarred the earth, devastating mountains, forests, rivers, and oceans.

Humans have created these problems and therefore can also solve them. Some scholars have suggested, for example, that a perceived disconnection of humans from the natural environment is at the very heart of global climate change and of broader environmental crises (Zylstra, Knight, Esler, & Le Grange, 2014). Over half of the world's population now resides in urban environments and the rate of global urbanisation continues to increase, suggested to reach 66% by 2050 (United Nations Department of Economic and Social Affairs, 2014). Higher levels of urbanisation have been associated with higher rates of depression and psychosis (Sundquist, Frank, & Sundquist, 2004), and residents in cities are less likely to consider themselves happy (Glaeser, 2000). Also, the move from rural to urban is a key driver of human disconnection from nature, as is the increased use of electronic and digital media, increased sedentary lifestyles, individual non-reliance on natural food systems and nature more generally, all of which are associated with urban existence (Pergams & Zaradic, 2006; Zylstra et al., 2014).

Examinations of climate change and associated environmental problems have resulted in action aimed at reducing human impact on the natural world. Shifts in energy systems towards

more sustainable methods has become more widespread. Certain products like single-use plastics, such shopping bags or plastic straws, have received intense scrutiny as a result of their apparent negative impacts on the natural environment, resulting in a shift away from the use of these products. In some places these actions have been taken on a small and local level, as a group of restaurants did in Halifax recently (e.g. Squires, 2017; Woodford, 2017) and a chain of pubs did in the United Kingdom (e.g. Palmer, 2017), while in others, and particularly over time and as momentum is gained by movements championing these actions, policy is made by a larger group and even at a city or governmental level. Seattle, WA, for instance has stated that it will ban the use of all plastic straws and utensils as of July 2018 (Lee, 2017), and Victoria, BC, has said they will ban plastic bags as of July 1, 2018 (Pawson, 2017). Kenya has taken this even further by banning plastic bags country-wide, punishable by hefty fines or jail time (Hourelid & Ndiso, 2017). Further policy decisions have resulted in more stringent restrictions on pollution, and even promises by governments to meet specific targets in the hope that further environmental catastrophe can be minimized and eventually curbed. Promises, such as those made by the 172 signatory countries that ratified the Paris Agreement.

While policy approaches to environmental issues are important and necessary, they treat the symptoms and outcomes of human behaviour that result in environmental degradation, not the behaviour itself. It is equally important, if not more so, to examine and target the root causes of these issues and the behaviours from which they stem. If human/nature disconnection is at the heart of recent environmental crises, then this is something that necessitates further examination. Improved connection with the natural world has been suggested as a predictor and motivator for environmentally responsible behaviours (Zylstra et al., 2014), and benefits psychological health as well (Kaplan & Kaplan, 1989; Kaplan, 1995; Ulrich et al., 1991; Zelenski & Nisbet, 2012).

The thesis that follows examines the hypothesis that humans have become disconnected from nature and that this disconnection is a leading cause for many modern ailments, both psychological and environmental. Building from the study by Nicholls and Gray (2007), I will explore the use of mindfulness as a tool that can help address this disconnection, promoting both ecological and human well-being. Mindfulness has been suggested to have many shared outcomes with nature connectedness, as well as its own benefits that work towards environmental and psychological health (Brown & Kasser, 2005; Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Ericson et al., 2014; Kabat-Zinn, 2003), possibly furthering the goal of fostering human/nature connection for the benefit of human and environmental health in an increasingly urban era.

The following chapter will explore the fields of nature connection (and disconnection), surveying the literature for possible causes to human/nature disconnection and explaining why nature connection is important. The literature of mindfulness practice will then be examined to tie it in with nature connection, exploring why it is a feasible, and desirable, tool to be used in formulating and reinforcing nature connection, as it works towards similar outcomes. A summary of what mindfulness is, its history, and its use in practice will also be outlined. Finally, the chapter will conclude with an examination of the ways in which mindfulness and nature connection can work together towards mutual benefit.

Chapter three is comprised of a research study examining the use of mindfulness protocol during an in-depth nature experience. The objective is to determine if mindfulness is a useful tool on in-depth nature experiences, and if it supports human/nature connection. The research questions examined are as follows:

- **RQ1:** Does mindfulness practice on in-depth nature experiences affect participant attitude towards the natural world?
- **RQ2:** Does mindfulness affect participant experience in the natural world?
- **RQ3:** Does mindfulness practice impact the depth and/or longevity of the outcomes of in-depth nature experiences?

The study is comprised of three groups of adolescents (between 13 and 18 years of age) from St. Michaels University School in Victoria, BC participating in an outdoor education program. All three groups spent five days hiking the Juan de Fuca trail on Vancouver Island, Canada. Two groups were tasked with a daily mindfulness practice (Groups 2 and 3), and one group was not (Group 1), to determine if there was a difference between the experience of each group and whether or not mindfulness impacted the experience in a meaningful way.

The fourth and final chapter will give summation of the preceding chapters to make plain the outcomes of the research and literature review. This concluding chapter will examine limitations to this study and offer suggestions for further research.

Chapter 2 – Literature Review

2.1 Introduction

In this chapter I will discuss the trend of human disconnection from nature (see: Zylstra et al., 2014), examining possible causes and outcomes resultant of this disconnection. It is important to understand the roots of human/nature disconnection, and the consequences, so that the issue can be understood and so that movement can be made towards remedying the problem. Furthermore, I will outline the literature that examines the importance of strong human/nature connection, as well as the purported benefits felt through this affiliation with the natural world. Following this, I will begin a discussion of mindfulness, giving explanation for this concept, as well as using the literature on mindfulness to justify its place in fostering nature connection.

2.2 Human/Nature Disconnection

“Nature holds the key to our aesthetic, intellectual, cognitive and even spiritual satisfaction.”

E.O. Wilson

Biologically, humans are animals, and, inescapably, consume the natural world every day. However, there is a cultural assumption, widespread in the Euro-Americas, that humans stand apart from nature, that the world is divided into what is natural (of nature) and what is “human-made” (separate from nature) (see: Vining, Merrick, & Price, 2008; Zylstra et al., 2014). Humans have distanced themselves from the natural world both mentally and physically, building cities to keep the wild away, and claiming mastery and dominance over nature. In some

cases, this disconnection is by design, and in others it is simply an outcome and side-effect of urban development. Disconnection from nature is, however, a relatively recent phenomenon in human history. At one time, humans were wholly dependent on the natural world. A deep understanding of and closeness to the natural environment was required to cultivate the land, to harness medicinal qualities of various flora, to hunt, to avoid predators, and in general, to survive. For nearly 90% of human history, hunting and gathering was the primary method of subsistence (Lee & Daly, 2002). Being separate from nature was not an option, nor could it likely have been conceived of as a possibility as it was so integrated into human existence.

A number of researchers and authors, such as Richard Louv, who popularized the concept of Nature Deficit Disorder (a popular culture reference to the lack of nature affiliation by humans) have postulated different theories as to when and how this disconnection occurred. Louv cites, as the main contributors to disconnection, the rise of urbanization, the improvement of and increased use of technology, and the shift in understanding nature as something to experience to something to consume (Louv, 2008, 2012). These factors are corroborated in the literature (see: Scull, 1999; Vining, 2003; Zylstra et al., 2014). It is likely that these are contributors to a process of disconnection rather than the core causes themselves. In my analysis, disconnection falls into two primary categories: physical disconnection and psychological disconnection. I do not see these categories as mutually exclusive, and causes can be associated with both physical and psychological disconnection or one may result in the other. Furthermore, the following causes for disconnection are by no means a complete list, but merely a collection from works that examine disconnection.

2.2.1 Physical disconnection

Physical disconnection is most easily seen through the actual removal of humans from nature. Cities and urban areas are the epitome of so-called human-made, or ‘built’ spaces. Everything is controlled and very little, if anything, is ‘natural’ in the sense that it is not planned and manufactured by humans. Whereas rural areas, though they too can be planned, remain in contact with nature to a greater degree (Klassen, 2010). In 2014, the World Urbanization Prospects, a report released by the United Nations, announced that 54% of the global population now lived in urban areas (United Nations Department of Economic and Social Affairs, 2014). For the first time in human history, the urban population is larger than the rural population, indicating the movement away from nature.

Urbanization began in earnest with the Industrial Revolution in the mid-18th century. There were other pockets of industrialization throughout history, but none quite so profound nor as sustained. The Industrial Revolution, by way of improvements in energy use, such as in water and coal power, brought about vast increases in mechanization and, as its name suggests, industrialization. From this, the factory system was born, and more jobs could be found in cities. Additionally, there was the (often violent) removal of people from the land by way of enclosure. Land that was once held for common-use was taken and given an owner. Arable land used for subsistence was taken and turned to pasture and the poor rural population had to move to find adequate work to provide for themselves and their families (Polanyi, 1944). This move to pastures and to enclosed, privatized land, as well as mechanization and improvements in agricultural methods that demanded fewer people to operate farms, necessitated the movement of a large number of people to cities to find work and in general to survive. Standards of living did

eventually increase as a result of these factors, along with the population, particularly in urban areas.

All in all, 17% of the population of England and Wales lived in urban areas in 1801, but by 1891, that had increased to 54% (Watson, 1993). Growth did not stop, or even slow, however, and between 1800 and 2000, the global population grew from around one billion to six billion, and energy use increased by about 40-fold and economic production by 50-fold (Steffen, Grinevald, Crutzen, & McNeill, 2011), marking the beginning of a time of unprecedented growth and socio-economic change. This period, the Great Acceleration, from the beginning of the Industrial Revolution in 1750 to 2010 is the dramatic increase and quickening of human activity and its outcomes on the planet. The rapid increase of population, the huge release of greenhouse gases, the consumption of fossil fuels, the loss of forests, and ocean acidification are all examples of rapidly accelerating human activity that impacts the planet (Doucet et al., n.d.; Steffen, Broadgate, Deutsch, Gaffney, & Ludwig, 2015)

Other outcomes of the industrial revolution were the true beginning of international trade (Thomas & McCloskey, 1981). The British textile industry boomed in particular, and the once-cottage industry became a source of national income as it shipped its products internationally. Improvements in technology allowed for Britain, a relatively small country, to expand throughout much of the world, and in order to keep up with development, resource-use expanded greatly. Coal power became a huge driver of development and as such, coal mining substantially increased (Clark & Jacks, 2007). Previously, charcoal was the primary fuel, and what little coal was used was mined near the surface. At the time of the Industrial Revolution, demand for coal skyrocketed, though its productivity did not, and so more coal was needed, and therefore mined, and at greater depths (Clark & Jacks, 2007). All of this resulted in the beginnings of an era

dedicated to the removal of humans from the natural world so that they may reside in a world of their making. The natural world was, by necessity of this progress and growth, full of resources that required exploiting.

In geologic terms, time moves very slowly. The geologic time scale breaks the history of the earth into periods of time based on major events, and most importantly, the geological record. Ice cores, sediment levels, rocks, and other such features determine the geological record and therefore the geologic time scale (Byrd, 2016). Currently, Earth is in the Holocene epoch, which began 11,700 years ago with the end of the last cold episode and general climate warming, as marked by ice core data (Walker et al., 2009). Epochs are largely defined as being tens of millions of years in length, and yet scientists are considering cutting the Holocene short and establishing a new epoch: the Anthropocene (Byrd, 2016; Phys.org, 2016; Steffen et al., 2011). The Anthropocene would signify humans as a current leading source of geological impact, indicating that human activity is as influential as natural geologic forces, if not more so. Some suggest this as beginning with the Industrial Revolution (Steffen et al., 2011), while others point to earlier times such as the advent of agriculture and forest clearing, starting roughly 8000 years ago (Ruddiman, 2003). However, the current leading consensus for when the Anthropocene truly began is in the mid 20th century (Byrd, 2016; Phys.org, 2016). From that point forward, there has been a notable increase in carbon dioxide and methane introduced into the atmosphere, resulting in rising global temperatures; a loss of atmospheric ozone; increased acidification of the world's oceans; widespread deforestation; species loss and extinction; population boom; and so on (Phys.org, 2016).

However, unless there is an indication in the geological record, it cannot be considered for the introduction of a new epoch. As such, evidence in sedimentary layers is being considered,

such as anthropogenically derived microplastics that are collecting, forming sediment layers (Claessens, Meester, Landuyt, Clerck, & Janssen, 2011; Corcoran, Moore, & Jazvac, 2014) and radioactive isotopes that resulted from thermonuclear testing that have left a clear global atmospheric and geological signature (Dean, Leng, & Mackay, 2014; Waters et al., 2016). The first step in officially declaring the Anthropocene took place in August 2016, when the Working Group on the Anthropocene voted in favour of introducing the Anthropocene as a new epoch (Byrd, 2016; Phys.org, 2016). Ratification by three more academic bodies is needed to officially adopt the term. Whether it is officially adopted or not, the current debate over the Anthropocene is indicative of the extent of humanity's impact on the natural world, largely a result of disconnection from nature, through urban growth, population increase, industry, and resource exploitation.

2.2.2 Psychological disconnection

Less visible is the psychological disconnection of humans from nature. This distancing has had a number of causes. Lynn White, Jr. (1967) points to the rise of Judeo-Christian religion as one such cause. Prior to the rise of Christianity, many forms of spirituality and religion were directly tied to nature. Numerous deities took animal form or characteristics. Ancient Egyptian gods give striking examples of this through their distinctive pictography. As examples: Anubis, a god of cemeteries and embalming, is depicted as a crouching jackal; Bastet, a goddess associated with anger and vengeance and is depicted with either lion or cat features; Horus, the god of the sky is portrayed as a man with a falcon head; and Ra, the creator and god of sun, is also represented as a falcon, only he has a disc shaped crown to represent the sun (Hart, 2005). In ancient Greek mythology, human-animal hybrids abound, with examples such as the Minotaur, a

human with a bull's head; centaurs, half horse and half human; and satyrs, which are half human half goat (Collins English Dictionary, 2017a, 2017b, 2017c). Gods in ancient civilizations were often represented as having aspects of nature and natural phenomena. Gods of thunder and lightning are seen in a vast number of different cultures, such as Zeus in Greece, Jupiter in Rome, the Hindu god, Indra, and the Norse god, Thor (Davidson, 1965). Animistic religions believed that animals and living things all had souls, and that they must be placated in order for the living thing to be used, such as a tree cut down or an animal hunted (White, 1967). Christianity on the other hand is a deeply anthropocentric religion (Schultz, Zelezny, & Dalrymple, 2000; White, 1967). God created humans in his image, and the world for humans to rule over. No longer did all living things have spirits or souls, as those were attributed to humans alone. There were no more souls and spirits to placate, and the world could be exploited by man with no moral or religious restraints. After all, the world had been created for man's exploitation, and in this worldview, from their very conception, humans were made apart from nature.

Other psychological aspects of human/nature disconnection rest in more recent developments. Returning to the Great Acceleration, there is a case to be made about the mental shift in how nature is viewed. From the industrial revolution, and perhaps earlier, nature ceases to be something that must be harnessed for survival (i.e. through subsistence agriculture), instead, it becomes something to be exploited for the sake of economic growth. As an example, White (1967) points to the change in agricultural technology in medieval northern Europe. Early plows were drawn by two oxen and required cross-plowing as the plows could not turn the soil deeply enough. At this time, plots of land were small and divided so that individual families could work their own parcel. The innovation of a plow that had a vertical *and* horizontal blade changed this, allowing for the soil to be turned with greater ease, but required more oxen as the

friction was much greater. Thus, the family subsistence plots were replaced with larger plots and farmers would pool their oxen. The conception of nature changed for humans: “Formerly man had been part of nature; now he was the exploiter of nature” (White, 1967, p. 3).

James Scott (1998) calls the shift towards the exploitation of nature for the sake of putative progress, the high-modernist ideology. It is a result of the optimism propagated through unprecedented scientific and technical progress, the expansion of production, the increased fulfillment of human needs, and the domination of nature. High-modernist ideology is encapsulated in rational design of the social order corresponding to human understanding of natural laws. This ideology, states Scott, is not to be confused with scientific practice, however, as it is merely faith in science, technology, and progress without the critical skepticism that is paramount to true scientific endeavor. High-modernism primarily considers order to be displayed visually and aesthetically. The efficient rationality of organized cities, villages, or farms makes sense to proponents of high-modernism, whereas the perceived disorder of nature is deemed inefficient and a hindrance to progress (1998, p. 4).

High-modernist ideology and the zealous desire for order and uniformity is indicative of a shift in thinking that brought about the idea of nature as a commodity and that human intervention was both warranted and necessary for improvements and growth. Scott gives an example of German forest management that illustrates the ideology and its drawbacks. In the face of a shortage of lumber due to forestry mismanagement leading up to the 18th Century, forests were reorganized in a way that appeared to be scientific and purposeful. Like rows of a farmer’s field, trees were evenly distributed and organized. Any unwanted debris or underbrush was done away with as if they were weeds. Initially, the outcome was positive and forest yields increased, however, by the second and third generation of these forest-farms, the yield greatly

decreased. The natural processes that replenishes nutrients in the forest, that provide habitat for animals that prevent pests, and so on were degraded or destroyed and so the forests failed (Scott, 1998). This fanatical belief in order and legibility is indicative of this shift towards commodification and industrialization of nature, and is suggestive of the shortcomings of these beliefs.

The high-modernist ideology has only been solidified through modern capitalism. There is little room for sentimentality in modern capitalism, where the bottom line is the top priority. Nor, is there room for excessive foresight. If an immediate profit can be turned, then it is looked upon favourably. Examples of this are numerous and global, from deforestation of the Amazon rainforest to make way for soy and cattle production (Butler, 2016; Nobre et al., 2016), to the collapse of the northern cod fisheries off the coast of Newfoundland by overfishing (Hutchings & Myers, 1994), to the dire air pollution situation in northern China as a result of heavy reliance on coal (Chen, Ebenstein, Greenstone, & Li, 2013). The long-term outcomes were not, and often are not still, considered as the economic gain in the short term is too enticing. Capitalism is a short-sighted system that does not look far enough to see that immediate economic gains often result in long term losses (Magdoff & Foster, 2010).

It is important to outline these possible causes as it shows how we've disconnected from nature. Understanding these causes allows us to better transform these disconnective behaviours, practices, ways of living, and ways of thought. It is also important that we see that disconnection is more than just a physical phenomenon. The movement of populations into urban centers, into the so-called 'human' world is but one way that disconnection has taken place. The mental shift and perceived dominance of nature by humans is also a key contributor to human/nature disconnection and therefore must be understood and challenged if humans are to foster a

reconnection with the natural world. Furthermore, as it is vital we understand how and why the human/nature disconnection occurred, it is also paramount that we understand why reconnecting with the natural world is necessary.

2.2.3 Why is human/nature connection necessary

One theory for why it is important for humans to connect with the natural world is that it is evolutionarily and biologically important for human functioning. The *Biophilia Hypothesis*, posited by Edward O. Wilson in 1984, is described as “the urge to affiliate with other forms of life” (Wilson, 1984, p. 85) and the “innate tendency to focus on life and lifelike processes” (Kellert & Wilson, 1993, p. 1). This theory states that humans have a biological and evolutionary imperative to connect and associate with the natural world. Others have taken Wilson’s hypothesis and expanded it, suggesting that humans may affiliate with landscapes and aesthetic aspects of the natural world similarly, which may be explained by an evolutionary understanding of what a good potential habitat may look like (Frumkin, 2001; Heerwagen & Orians, 1993). This is seen in other animals, such as birds who use tree density and the arrangement of branches as indicators of good habitats (Frumkin, 2001; Heerwagen & Orians, 1993). For humans, the preference often leans towards areas that are similar to savanna landscapes, that are relatively open with grassy vegetation and small groupings of trees where water is present (Frumkin, 2001).

Conversely, dislike of certain aesthetic or landscape features may be resultant of poor habitat qualities (Heerwagen & Orians, 1993). The aversion to particular aspects of the natural world can be seen as *biophobia*, and some authors include this in the Biophilia Hypothesis (see:

Ulrich, 1993). Biophobia may explain certain fears and phobias. For example, studies have shown that humans, and non-human primates, have evolved with a predisposition to fear certain threats, such as snakes and spiders (Cook & Mineka, 1987, 1989; LoBue & DeLoache, 2010; Öhman, 1986).

Biophilia suggests that human evolution has imprinted certain traits into human DNA. After all, it has been a relatively short period of time since humans began living in a mechanized, urban, industrialized world. Only a few generations separate modern humans from ancestors who lived much closer to nature. Instinctual or evolutionarily informed associations with aspects of nature would be to the benefit of human survival and so it would make sense that humans function well in environments in which they are predisposed to thrive. Also, Biophilia may provide an explanation for why the removal of humans from nature has negative outcomes. Humans did not develop and evolve to be apart from nature.

Another theory postulated as to why associating with the natural world is beneficial is the Attention Restoration Theory (ART). Rachel and Stephan Kaplan established ART in the 1980s (Kaplan & Kaplan, 1989), with the core of the theory suggesting that concentration and attention is strongest after spending time outdoors, in nature. It is asserted that there are two main forms of attention: “involuntary attention, where attention is captured by inherently intriguing or important stimuli, and voluntary or directed attention, where attention is directed by cognitive-control processes (Berman, Jonides, & Kaplan, 2008, 1207). William James, in 1892, proposed the separation between the two types of attention, and research since has validated the distinction (Berman, Jonides, & Kaplan, 2008; James, 1892). Voluntary attention is used when the task or object is not inherently interesting and purposeful use of will power is needed to focus. Additionally, effort must be made to suppress distractions. Directed attention is therefore a

taxing activity and ART submits that direct attention is restored by interaction with nature due to nature's ability to innately capture attention, therefore making use of involuntary attention.

Involuntary attention allows for directed attention to rest and replenish (Berman et al., 2008; Kaplan & Kaplan, 1989; Kaplan, 1995). The result of nature experiences in studies examining attention have shown improved test taking ability, positive affect, reduced blood pressure (Hartig, Evans, Jamner, Davis, & Gärling, 2003).

A further theory outlining benefits found in human/nature association is Roger S. Ulrich's Psycho-evolutionary Theory (PET) (also referred to as Psycho-evolutionary Stress Reduction Theory (Barton, Hine, & Pretty, 2009). PET postulates that nature may provide stress relief and recovery through innate, evolutionary derived, responses to aspects of the natural environment (Bowler, Buyung-Ali, Knight, & Pullin, 2010; Ulrich, 1983). PET is complementary to both the Biophilia Hypothesis and ART, however PET relies more heavily on the idea that positive outcomes from nature interaction are derived from the relief and recovery from stress, rather than different modes of attention. PET proposes that certain natural characteristics, such as water features, deflected vistas¹, relatively uniform ground texture, and spatial openness generate positive affect which are likely evolutionary signals related to safety and survival (Bowler et al., 2010; Ulrich, 1983). In one principal study, Ulrich (1984) examined surgery patients to examine the effect the view from their window had on their recovery. One set of patients looked out onto a plain brick wall, whereas the other set looked out onto a stand of trees. The patients who looked out onto the trees recovered more quickly, took fewer analgesics, had more positive notes from their attending nurses, and had fewer complications. Ulrich's

¹ Jay Appleton coined the term *deflected vista*, which is a land feature where the line of sight is deflected or curved, indicating that new landscape information is just beyond. It has been proposed to foster anticipation and curiosity. Examples include paths, rivers, and valleys (Ulrich, 1983).

conclusions were that the reduction in stress, due to the view of trees, allowed for improved healing in the patients (Ulrich, 1984). This study strongly suggests that associating with nature benefits human well-being.

These theories help us understand some of the potential benefits for associating and connecting with the natural world on a large scale, and give compelling reasons for formulating a strong human/nature connection, however, a great many other studies demonstrate even wider, though more specifically examined, benefits to associating with the natural world. Nature interaction has been linked to effects such as the reduction of attention deficit hyperactivity disorder (ADHD) through exposure to green nature (Kuo & Taylor, 2004); a decrease in anger and violent behaviour (Frumkin, 2001; Hartig, Mang, & Evans, 1991; Kuo & Sullivan, 2001; Maller, Townsend, Pryor, Brown, & St Leger, 2006); improvements in general health (Maas, Verheij, Groenewegen, Vries, & Spreeuwenberg, 2006; Pretty, 2004; Richardson & Mitchell, 2010) and psychological well-being (Keniger, Gaston, Irvine, & Fuller, 2013); as well as happiness (Zelenski & Nisbet, 2012). Shinrin-yoku, or forest air bathing, is a Japanese concept of “staying and/or walking in forests in order to promote physiological and psychological health” (Morita et al., 2007, p. 55), and it has been linked with reductions in blood pressure and blood glucose levels (Ohtsuka, Yabunaka, & Takayama, 1998) as well as lower cortisol levels in saliva, which is a stress hormone (Lee et al., 2011; Morita et al., 2007), and improvements to immune functions (Li et al., 2007).

Clinical use of nature has also been well documented and successful in practice (Harper, Russell, Cooley, & Cupples, 2007; Nicholls & Gray, 2007; Russell, 2001; Taylor, Segal, & Harper, 2010; Trace, 2004), though whether the outcomes are a result of nature interaction, the therapeutic intervention, or a combination of both is yet to be studied in depth, though it is likely

that nature plays a significant role (Taylor et al., 2010). Researchers examining adventure therapy (AT) and wilderness therapy (WT) often explain the importance of uncertainty, both in setting and activity, as the important factor for therapeutic change (Russell, 2001; Taylor et al., 2010). The effect of nature itself in AT and WT is less often examined and may, by way of the benefits listed above, be a catalyst for therapeutic change (Taylor et al., 2010). Further study of nature's role in AT and WT will need to be examined for this to become more clear.

Furthermore, as it is believed by many that human/nature disconnection is at the heart of global climate change and other environmental crises, reconnection with the natural world may mitigate many of these issues (see: Zylstra et al., 2014). The reason for this belief is that as humans disconnected from nature, care and stewardship of the natural world diminished in turn. Nature became a resource to exploit, something far away and other. As disconnection progressed and proliferated, care for nature diminished, and as most of the population resides in human-made, urban areas, the human impact on the natural world is not often visible.

As such, one of the suggested outcomes from fostering human/nature connection is a renewed importance and visibility of and care for the natural world resulting in an increased environmental ethic and environmentally responsible behaviours (Bragg, Wood, Barton, Pretty, & Care, 2013; Keniger et al., 2013; Klassen, 2010; Pyle, 2003; Rogers & Bragg, 2012; Zylstra et al., 2014). For example, connection with nature may provide a person with a desire to protect the natural world as a result of an affinity with a place they do not wish to see degraded (Haluza-Delay, 2001; Nisbet, Zelenski, & Murphy, 2008). This has been true in my personal experience. By participating in the Outdoor Leadership course, I was exposed to the natural world more thoroughly than I had at any time previously in my life. The result was that I became significantly more focused on environmental causes, I changed my habits and behaviours to align

with these newfound values, I sought out nature to be a part of it once more, and my life-direction moved in alignment with these new values as well.

However, nature connection is not cultivated simply through the understanding that it is necessary. Zylstra et al. (2014) outline three interconnected dimensions of fostering nature connection, those of cognition, affect, and experience. The cognitive dimension is met through gaining information about nature. This dimension is typically approached in a formal manner, such as in a classroom, through media sources, or internet. The second dimension, affect, is best described as having a sense of belonging and an emotional link with the natural world. This can be through a sense of oneness with nature, or of love and respect for the more-than-human world. The final dimension is that of experience. This is the straightforward aspect of direct contact with the natural world, experiencing it and interacting with it.

These aspects that Zylstra et al. (2014) outline fit nicely within the elements of practice described in Outdoor Education (OE), AT and WT, and Outdoor Adventure (OA) literatures. Harper (2017) delineates these elements²: Active kinaesthetic (experience); Experiential learning methods (cognitive/experience); Integration of therapeutic practice (cognitive/affective); Connection to place (cognitive/affective/experience); Generation of metaphors (cognitive); Challenge (experience); Natural Consequences (experience/cognitive); Reflection (affective); Alternative entrance to awareness (cognitive/affective). Moreover, OE literature relies, in large part, on place-based approaches to education (Harper, 2017; Lloyd & Gray, 2014; Woodhouse & Knapp, 2000). Associating with the natural world, in addition to learning about it, is key to education in the outdoors, as it is with fostering a connection with it (Lloyd & Gray, 2014; Zylstra et al., 2014). Furthermore, OE literature indicates that associating with nature at a young

² Parentheses indicate Zylstra et al (2014) elements of nature connection to demonstrate cross-over in literatures.

age helps integrate environmentally sustainable behaviours, as it is in childhood and youth that worldviews are developed and established (Lloyd & Gray, 2014; Pergams & Zaradic, 2008). Therefore, immersing young people in nature through an OE program may have a longterm benefit of helping to develop environmentally-minded persons who will participate in society with sustainable morals and behaviours. The outcomes of OE programs in nature have been demonstrated to have an ongoing cycle of personal change within participants as well, so the effects are not fleeting; they persist (Neill, 2002; Neill & Richards, 1998).

My experience of OE met these dimensions. Guides introduced me to the local flora and fauna, I interacted directly with the natural world in a very close setting, and came to respect, love, and feel a part of the natural world. I learned the specifics of the environment in which I was placed (cognitive), experienced it directly (experience), and was awed by it and came to appreciate and care for it (affective). It is through these elements, whether they be through formal programming of an OE or AT/WT curriculum or more informally, that nature connection begins to take place, and the benefits of this connectedness can be obtained.

2.3 Mindfulness

“The best way to take care of the future is to take care of the present moment”

-Thich Nhat Hanh

As I mentioned in the introduction, I was initially drawn to the subject of nature interaction and its benefits, however my focus shifted, or rather, broadened to include mindfulness. Mindfulness may appear out of place with the above discussion of nature connection, however I, and others (see: Nicholls & Gray, 2007; Trace, 2004), believe them to be related and complementary. Many of the outcomes of associating and connecting (or

reconnecting) with nature are similar to the outcomes felt through mindfulness practice. Each have the potential for profound benefit to individuals and society, and if used together it is possible that they may provide a compounding benefit, or at the very least a supplement to the other. I will give a brief outline of what mindfulness is, followed by its use and purported benefits and outcomes, and will conclude this section by outlining the ways that mindfulness and nature connection may work together.

2.3.1 What is mindfulness?

To understand how mindfulness may benefit nature connection, and further the outcomes felt from that, one must first have a look at what is mindfulness, and what are its effects. Jon Kabat-Zinn, who can be described as the father of the modern mindfulness movement, defines mindfulness as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment.” (Kabat-Zinn, 2003, p. 145). The idea is to achieve an awareness of the present moment through a focused, non-elaborative attention on the current and ongoing sensory, cognitive, and emotional experience and is simply registered and acknowledged as a transient condition and not necessarily a reflection of reality. This way of focusing one’s attention is most often developed by way of a meditation practice, though not exclusively as there are other activities, such as yoga that contain aspects associated with mindfulness (Caldwell, Harrison, Adams, Quin, & Greeson, 2010). Meditation is most easily understood as an exercise in attentional control to maintain focus in a particular way and on a specific object, process, or mantra (Baer, 2003; Chambers, Gullone, & Allen, 2009).

The concept of mindfulness is strongly linked to eastern meditative and yogic traditions, of which Buddhism is the most notable (Brown et al., 2007; Chambers et al., 2009; Kabat-Zinn, 1982). In fact, mindfulness has been described as “the heart” of Buddhist meditation (Kabat-Zinn, 2003; Thera, 2005). Similar concepts, however, can be found throughout history, across cultures, and various movements of philosophy and psychology, as Brown et al. (2007) suggest, including existentialism, phenomenology, and naturalism in Western European thinking; transcendentalism and humanism in America; and ancient Greek philosophies. What is central to mindfulness, and found in these other various thought practices, is the notion of awareness, clear consciousness, and being present in the moment. The fact that these characteristics can be found in such a wide breadth of philosophy, culture, and temporality suggest the possibility that these are fundamental aspects to the human experience (Brown et al., 2007).

As such, mindfulness has a long history, though is traditionally tied to philosophy and spirituality. It was not until the late 1970s that mindfulness began its modern popularization and non-traditional practice with the help of Jon Kabat-Zinn. As a result of his stress reduction and relaxation program (SR-RP), which eventually evolved into Mindfulness-Based Stress Reduction (MBSR). SR-RP and MBSR were utilized to help alleviate the suffering of those with chronic pain with the use of yoga, meditation, and reflection, and eventually expanded as a method of general stress reduction and quality of life program (Brown et al., 2007; Chambers et al., 2009; Kabat-Zinn, 1982). MBSR is now one of the most frequently used and cited methods of modern, clinical use of mindfulness practice and invigorated the study into the outcomes of mindfulness practice (Baer, 2003; Kabat-Zinn, 1982, 2003; Kabat-Zinn et al., 1992; Pickert, 2014; Shapiro, Schwartz, & Bonner, 1998).

2.3.2 The benefits of mindfulness

To date, mindfulness has been shown to have success in treating depression, preventing its relapse, and reducing its residual symptoms (Hayes, 2004; Hofmann, Sawyer, Witt, & Oh, 2010; Kingston, Dooley, Bates, Lawlor, & Malone, 2007; Kohlenberg, Hayes, & Tsai, 1993; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan, Heard, & Armstrong, 1993; Ma & Teasdale, 2004), in treating anxiety (Hofmann et al., 2010; Kabat-Zinn et al., 1992; Roemer & Orsillo, 2002; Shapiro et al., 1998), psychosis (Bach & Hayes, 2002; Hayes, 2004), attention-deficit hyperactivity disorder (ADHD; Zylowska et al., 2008; Zylowska, Smalley, & Schwartz, 2009), substance abuse and addiction³ (Chambers et al., 2009; Murphy, Pagano, & Marlatt, 1986), body-image problems (Stewart, 2004), eating disorders (Fairburn, Cooper, & Shafran, 2003), trauma and post-traumatic stress disorder (PTSD; Follette, Palm, & Pearson, 2006; R. W. Thompson, Arnkoff, & Glass, 2011), and psychological distress and neuroticism (Brown & Ryan, 2003).

Mindfulness has also been evidenced to help alleviate secondary issues of major illnesses/ailments, as well as concerns associated with stress (Kabat-Zinn, 1982; M. Thompson & Gauntlett-Gilbert, 2008). These include: psoriasis (Kabat-Zinn et al., 1998), type-2 diabetes (Rosenzweig, Reibel, Greeson, Edman, & Jasser, 2007), fibromyalgia (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007), issues related to rheumatoid arthritis⁴ (RA; Pradhan et al.,

³ It has been suggested, however, that mindfulness may in fact increase substance abuse in some cases. Mindfulness promotes greater introspection, which may allow for increased sensitivity to difficult inner experiences, memories, emotions, or thoughts. As substance abuse can result from a desire to avoid or 'numb' painful states, substance use may increase to account for greater sensitivity to inner experiences. This is not necessarily the case, but has been observed. On the other hand, mindfulness training with aspects of spirituality is shown to decrease substance abuse (Leigh, Bowen, & Marlatt, 2005).

⁴ Mindfulness had an effect on the subjective well-being of patients with RA, improving life satisfaction and reducing likelihood and effects of depression, though had little to no effect on the progression of the disease (Pradhan et al., 2007; Zautra et al., 2008).

2007; Zautra et al., 2008), and chronic lower back pain (Morone, Greco, & Weiner, 2008). Furthermore, use of mindfulness has been associated with improved development of the brain's executive functions, such as working memory, organization, problem solving, planning and action execution, sustained attention, and general regulatory behaviour (Chambers et al., 2009; Diamond & Lee, 2011; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010; Lutz, Slagter, Dunne, & Davidson, 2008; Schonert-reichl et al., 2015; Teper & Inzlicht, 2013). Mindfulness has also been demonstrated to benefit subjective well-being (SWB), decreasing the intensity and frequency of negative affect (Brown & Ryan, 2003; Brown et al., 2007; Collard et al., 2008; Ericson et al., 2014), offering better adaptation to stress, both physically and mentally (Greeson, 2009; Marcus et al., 2003), improving romantic relationships (Brown, Ryan, Creswell, & Niemiec, 2008; Carson, Carson, Gil, & Baucom, 2004), and promoting general positive social behaviours and prosociality, while decreasing aggression, and improved academic scores (Schonert-reichl et al., 2015), negative introspection and ego-defensive responses (Brown et al., 2008; Chambers et al., 2009). Moreover, mindfulness has been linked with increased levels of melatonin, which is associated with cancer prevention, beneficial anti-inflammatory and immune system response, among other functions, (Massion, Teas, Hebert, Wertheimer, & Kabat-Zinn, 1995), improved attention and memory functioning (Chambers, Lo, & Allen, 2008), and increased compassion and empathy (Brown et al., 2007; Ericson et al., 2014). Many of these effects and outcomes may result from reducing stress and stress responses in the body, as well as offering methods by which a person can learn to better cope with stress and the underlying causes (Greeson, 2009).

These outcomes can be achieved through personal mindfulness practice, but also at times through directed clinical applications of mindfulness. Since the inception of MBSR, variations

have been established, such as mindfulness-based cognitive therapy (MBCT), dialectic behaviour therapy (DBT), and mindful emotion regulation, working off of the MBSR framework with some variation in protocol for a variety of outcomes (see: Baer, 2003; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Chambers et al., 2009; Hayes, 2004). These are the so-called *third wave cognitive therapies* and they are classified by their unique use of factors such as mindfulness, acceptance, cognitive diffusion, spirituality, and value systems (Hayes, 2004).

As mindfulness use and study has increased, it has worked its way into other sectors such as classrooms, demonstrating improvements in grades, cognitive and mental development, and social behaviours; corporate offices as a means to promote creativity, productivity, and develop a stronger sense of workplace culture; and mindfulness has even been used by the military (see: Michaelson, 2013; Schonert-reichl et al., 2015). Here, mindfulness has been used in an intervention capacity to treat stress, depression, post-traumatic stress disorder (PTSD), and related conditions in similar manner to the previously mentioned clinical mindfulness programs as issues such as PTSD, depression, substance abuse, and physical health problems are pervasive in service members who have had combat exposure (Erickson, Wolfe, King, King, & Sharkansky, 2001; Stanley, Schaldach, Kiyonaga, & Jha, 2011; Taft, Stern, King, & King, 1999).

2.3.3 Mindfulness and Connectedness with Nature

The benefits of mindfulness listed above provide ample reason for mindfulness to be practiced on its own, however, there is evidence and cause to propose the use of mindfulness as a tool to enhance and assist the goal of fostering and enhancing human/nature connection. Firstly, there are studies that specifically examine mindfulness and nature experience (see: Nicholls & Gray, 2007; Trace, 2004), however this literature is in its infancy and requires further

development. Where mindfulness and nature connection have been studied together, the link has been generally coincidental. For example, in Nicholls & Gray (2007), a group of participants in a four-day challenge-based adventure therapy was examined. The authors asked the question: “might participants with a destructive attitude towards the natural environment access the therapeutic powers of nature?” (p. 26), discovering that the participants could, in fact, access the therapeutic powers, and were able to develop more positive associations with the natural environment. In their discussion, the authors suggest that stillness, alone-time, and just *being* in nature (as opposed to *doing*) were key contributors to this conclusion.

This has strong connections to how mindfulness is practiced. What this suggests is that the methods used in mindfulness practices could carry over to benefit the fostering of nature connection. The natural world is often regarded as a place for ‘doing’. Humans seek nature out to go hiking, or kayaking, or biking, or another such activity, but rarely just to ‘be’ in nature. The purpose of mindfulness, to examine the present moment, is an act of just ‘being’. Zylstra et al. (2014) further this idea by suggesting that unstructured, creative time in nature may provide a greater advantage to fostering nature connection than structured time.

Moreover, mindfulness has been linked to other environmentally beneficial outcomes. Mindfulness has been suggested as a method by which sustainable behaviours can be encouraged, and the temptations of consumerism reduced (Ericson et al., 2014). This is achieved, Ericson et al. (2014) suggest, through the solidification and amplification of personal value systems through mindfulness practice. By allowing for a thought/action gap to form, mindfulness practice permits more deliberate behaviour and self-regulation, rather than acting automatically or habitually as if on “automatic pilot”. This may curb consumerist behaviour by strengthening intrinsic values a person may hold, reducing the likelihood of needless consuming of unneeded

things (Brown & Ryan, 2003; Ericson et al., 2014). Furthermore, living more simply, and therefore more environmentally responsibly, has been linked with increased SWB in much the same way that mindfulness has been linked with SWB (Brown & Kasser, 2005). Further studies have suggested that mindfulness can deepen and strengthen intrinsic and personal values that one holds and offer well-being though living one's life in accordance with these values (Ericson et al., 2014). Ericson et al. (2014) believe that the strengthening of intrinsic values can lead to a reduction in consumerism and wastefulness as well as an increase in environmentally sustainable behaviours.

However, moving beyond the research that directly links mindfulness and nature connection, environmentally sustainable behaviours, or is associated with outcomes that promote nature connection, there are a large number of similar and shared benefits between associating with the natural world and mindfulness. Further research is required to more adequately link the outcomes in these two fields, however it is possible that there could be shared benefit in a combined approach to mindfulness and nature connection. For example, both are well established in improving SWB and happiness, as well as reducing stress and anxiety, an assisting in various conditions that are associated with stress and anxiety (Brown & Ryan, 2003; Burns, Lee, & Brown, 2011; Follette et al., 2006; Gilbert et al., 2012; Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Morita et al., 2007; Pradhan et al., 2007; Shapiro et al., 1998; Silva, Keulenaer, & Johnstone, 2012; Ulrich et al., 1991; Zelenski & Nisbet, 2012); mindfulness and nature association has been linked with improvements in ADHD symptoms (Kuo & Taylor, 2004; Zylowska et al., 2008, 2009); and both have been demonstrated offering improved cognitive and attentional functioning (Berman et al., 2008; Bragg et al., 2013; Chambers et al., 2008; Kaplan & Kaplan, 1989; Kaplan, 1995; Maller et al., 2006; Schonert-reichl et al., 2015). Without further

research, it is difficult to know whether these shared outcomes are result of similar mechanisms, or if they are merely parallel outcomes achieved through different means. Follow up studies could examine if these benefits are compounding, that the concurrent use of mindfulness and nature association improve upon the effects felt by one of these methods. It is also possible that they do not compound and simply result in the same outcome.

2.4 Conclusion

As it becomes increasingly clear that humans are becoming disconnected from the natural world, it is important to understand the mechanisms that brought about this disconnection, the subsequent consequences, and why human/nature connection is imperative. Understanding how the disconnection came about can allow for the transformation of the underlying causes of the human/nature disconnect. Gaining a comprehension of the consequences grants an urgency to the mitigation of human/nature disconnection, as does the understanding of the positive outcomes of a strong connection with the natural world. Whether associating with nature is a biological imperative or not, or if the removal of humans from the natural world has led to environmental crises, the outcomes indicate that it is vital to societal and human well-being.

Furthermore, it is becoming increasingly understood that aspects of mindfulness may contribute greatly to the development of nature connection, and may further the benefits felt through human/nature connectedness. The research outlined above demonstrates these benefits and outcomes and the parallels between them are notable. Additionally, in the few studies that exist on the subject, mindfulness during nature experiences is showing promise as a way to enhance the outcomes of said nature experience, however these studies are yet in their infancy and, such as in the case of Nichols and Gray (2007), the use of mindfulness can often be

accidental, with the benefits being understood upon analysis of the study data. Mindfulness works to ground the participant in the present moment, and in doing so, while experiencing nature, may strengthen the connection one feels to the natural world. My research aims to *purposefully* examine this further in the following chapter through a research study conducted with the use of mindfulness with adolescent participants on multi-day in-depth nature experiences. Where other studies have linked mindfulness with nature connection through afterthought, my research will make intentional use of a mindfulness protocol. The research outlined in this chapter provides abundant reasons for the combination of mindfulness and nature experience for their shared benefits, and the following chapter intends to explore the use of mindfulness as a tool towards nature connection.

Chapter 3 - Introduction to research

This chapter will discuss the research project undertaken as a study into the efficacy of using mindfulness practice during an in-depth nature experience with adolescents. The intent of this study is to determine if mindfulness has a beneficial outcome to the participants, their experience in the natural world, and their connection with nature. The benefit and outcomes of both nature experience and mindfulness practice are explored in the previous chapter, and the linkages between the two fields of study are detailed. Both nature experience and mindfulness have demonstrable benefits to well-being, stress and anxiety reduction, and environmentally responsible behaviours. Direct connections between the two fields of study have been limited and typically coincidental rather than purposeful (eg: Nicholls & Gray, 2007). This study uses mindfulness intentionally and is intended to be exploratory and preliminary, and future research should be undertaken to further study the efficacy and benefit of an approach to nature experience where mindfulness is utilized.

3.1 Methods, methodology, research design

3.1.1 Research Questions

- **RQ1:** Does mindfulness practice on in-depth nature experiences affect participant attitude towards the natural world?
- **RQ2:** Does mindfulness affect participant experience in the natural?
- **RQ3:** Does mindfulness practice impact the depth and/or longevity of the outcomes of in-depth nature experiences?

Research question 1 is intended to determine whether or not mindfulness impacts the cognitive and affective reality of the trip for the participant, their attitude towards the natural world. Zylstra, Knight, Esler, and Le Grange (2014) outline that connectedness with nature is comprised of three symbiotic dimensions of interaction and experience with nature: cognitive, affective, and experiential. Additionally, outdoor trips can be mentally challenging in a number of ways. Removing oneself from the familiar can be difficult for some people, not to mention the removal of other familiar aspects of day to day life such as technology (examples: cell phones, computers, video games, etc.), the comfort of home, bed, and so on. This research question examines the cognitive and affective aspects of nature connection, as per Zylstra et al. (2014), but also the mental and cognitive reality of the trip for participants who practice mindfulness while on an in-depth nature experience.

This question builds off of previous studies examining nature experience, connectedness with nature, and attitudes towards nature, as well as the emerging investigations related to mindfulness-based nature experiences (see: Bragg et al., 2013; Mayer & Frantz, 2004; Nicholls & Gray, 2007; Nisbet et al., 2008; Rogers & Bragg, 2012; Wesley Schultz, 2011; P. Wesley Schultz, Shriver, Tabanico, & Khazian, 2004; Zelenski & Nisbet, 2012; Zylstra et al., 2014).

Research question 2 examines the experiential and physical reality of the trip for the participant. This question looks into the third aspect of nature connection suggested by Zylstra et al. (2014); the experiential dimension. Furthermore, a five-day hiking trip presents physical challenges in addition to those that are mental and cognitive. The trail is far more

difficult in some areas than a typical walk in an urban setting, or even a front-country nature experience, and obstacles include: protruding roots, fallen trees, puddles of mud, steep inclines and declines, river crossings, and large stony beach walking. This may be challenging to a participant's physical aptitudes if they do not lead particularly fit lifestyles, and may present other physical challenges such as injuries, both minor and major depending on the incident (examples: blisters, rolled ankles, bruises and scrapes from tripping or falling, breaking of bones from more dramatic incidents).

This question specifically examines if mindfulness makes the physical reality of in-depth nature experiences more manageable.

Research question 3 examines whether or not mindfulness practice deepens the nature experience so that it becomes more deeply ingrained in the participant. For example, will a participant who participated in mindfulness practice remember the experience more completely in the future than a participant who did not participate in mindfulness practice? Or were the outcomes more solidly ingrained in the mindfulness participant than the non-mindfulness participant? (example: did the mindfulness participant gain a deeper connection with the natural world than the non-mindfulness participant?).

This question is one that has not yet been addressed in the literature. Mindfulness works to deepen awareness of the present moment, and this may offer a method of strengthening experiences by living them fully and in a more focused way. This study examines if this results in a more long-lived outcome from nature experience paired with a mindfulness practice.

3.1.2 Hypotheses and Objectives

Hypothesis 1: Mindfulness on in-depth nature experiences will result in improved attitudes towards nature.

Hypothesis 2: Mindfulness on in-depth nature experiences will improve attitudes towards nature by allowing the participant to connect more deeply with the natural environment.

Hypothesis 3: Mindfulness on in-depth nature experiences will improve the individual physical experience for the participant by having the participant remain in the moment and not focusing on what is difficult or challenging.

Hypothesis 4: The outcomes will persist longer due to mindfulness practice on in-depth nature experience.

The intended goal of mindfulness practice is to ground the practitioner in the moment, which may increase or quicken the participant's feelings of solitude, "being away", and humility, which are vital to forming connections with the natural world, during the experience (Morse, 2011; Okada et al., 2013). For this reason, mindfulness may impact the participants' nature experiences in line with the above hypotheses.

3.1.3 Methods and Methodology

This research utilised, primarily, a qualitative and inductive approach, with one quantitative measure being utilized. Qualitative and quantitative data was sought to provide insight that one method could not supply individually, though again, this research was primarily

qualitative (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Furthermore, as the use of mindfulness in this context is relatively novel and under-examined, an inductive approach assists in constructing an emerging theory by creating explanations from collected data, rather than by collecting data to further existing theories (Charmaz, 2006; Martin, 1986; Mayan, 2009).

The research consisted of a number of stages, using various methods: (1) survey and questionnaire, (2) participant observation (field notes), (3) semi-structured interviews, (4) follow-up interviews (semi-structured). In keeping with an inductive method, data was simultaneously collected and analysed (Charmaz & Belgrave, 2012). Data was analysed and compared, within, and between each stage of research, as this iterative approach is crucial to an inductive process and for emerging theory (Charmaz & Belgrave, 2012; Mayan, 2009).

3.1.3a Five Facet Mindfulness Questionnaire

The Five Facet Mindfulness Questionnaire (FFMQ) was utilized, which is a 39-question tool, scored on a 5-point Likert scale from 1 (never) to 5 (always), used to measure five components associated with mindfulness: (1) observing, (2) describing, (3) acting with awareness, (4) non-judging of inner experience, and (5) non-reactivity to inner experience (Baer et al., 2008, 2006). The questionnaire has been shown to have good internal reliability, construct validity, and incremental validity (Baer et al., 2008, 2006; Cathcart, McGregor, & Groundwater, 2014). Baer et al. (2006) examined five other questionnaires measuring mindfulness (Mindful Attention Awareness Scale [MAAS]; Freiburg Mindfulness Inventory [FMI]; Kentucky Inventory of Mindfulness Skills [KIMS]; and Cognitive and Affective Mindfulness Scale [CAMS]), and extracted the five facets of mindfulness that were measured by each (typically individually) and combined them to create the FFMQ.

3.1.3b Participant observation

Participant observation is described as “a way to collect data in naturalistic settings by [researchers] who observe and/or take part in the common and uncommon activities of the people being studied” (DeWalt & DeWalt, 2011, p. 2). Observations of the direct activities, situations, and interactions were made, but also of the tacit experiences, some of which the participants may not be aware of, such as unconscious behaviours and personality qualities, or may not be expressed during the interviews by the participant. Use of expanded field notes, jot notes, and informal conversations were used in this phase of the data collection.

3.1.3c Semi-Structured Interviews

Semi-structured interviews were conducted in two stages. The first stage took place shortly after the hiking trips (within 10 days), and the second stage took place 3 to 4 months after the trips. A semi-structured format was utilized, and questions were general inquiries about previous nature experiences, current and past mindfulness practices, and about the individual’s experience on the trip. For the follow-up interviews, questions about the trip aimed to examine if the outcomes determined after the first set of interviews persisted over the 3- to 4-month period in between interview stages. More directed questions were modeled after the components of the Nature Relatedness Scale (NRS) (Nisbet, Zelenski, & Murphy, n.d.; Nisbet et al., 2008; Nisbet, Zelenski, & Murphy, 2009; Zelenski & Nisbet, 2012) and past studies that have examined similar topics.

3.1.4 The Trips: Research Participants and Setting

Three groups of students from St. Michaels University School (SMUS), an independent high school in Victoria, British Columbia, Canada were examined in the research phases. Each group participated on an outdoor hiking trip on the Juan de Fuca marine trail in May and June 2015. The Juan de Fuca trail is located on the traditional territories of Dididaht/Pacheedaht and T’Sou-ke First Nations. It is 47km in length, located on the southwest coast of Vancouver Island, BC. Kilometer 0 is located at China Beach, about 35km west of Sooke, BC, and the end of the trail, kilometer 47, is located near Botanical Beach, about 3.5km south of Port Renfrew, BC. It is within the Juan de Fuca provincial park boundary, and managed by British Columbia Parks. Some beaches are available for day-use, and logging activity occurs near the trail, though most of the trail is remote and isolated.

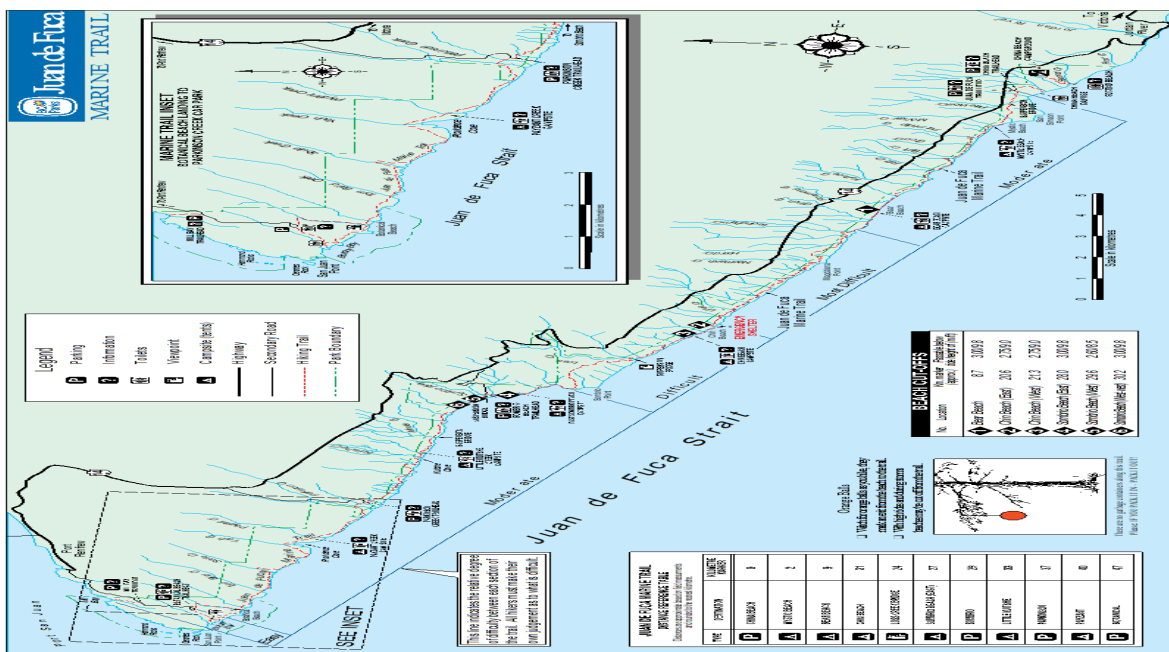


Figure 1: Map of Juan de Fuca Provincial Park. Red dashed line indicates the hiking trail. Port Renfrew, BC is located in the top right of the figure, Sooke, BC is east of the trail (BC Parks, 2015).

The trip takes four to five days to complete and the trail is rugged. There are a number of steep hills to climb and descend, and hikers often have to climb over or under fallen trees, cross

rivers and stony beaches. Water is collected and treated for drinking from streams. There are limited facilities such as outhouses and food caches where food can be stored at night to prevent food-related animal encounters.

These trips are pre-established and run each year through the SMUS Outdoor Education department. They are not a result of this research. For this reason, there were more students on the trips than participated in the research. An ethics proposal to the University of Victoria Human Resource Ethics Board (HREB) has addressed how non-participants (and participants) will be protected and states that no school evaluations or marking was done by the researcher, and non-participation, or withdrawal from research, will have no consequences for those individuals. Information pertaining to the group as a whole during the hike, inclusive of non-participants, is important to the research, and thusly, all non-participant data was generalised, with identifying information removed. For this reason, field notes and observations during the trips included all members of the trip regardless of their direct participation in the research. Each group was accompanied by the researcher and another professional outdoor guide and the guide to student ration never exceeded 1/6. The number of research participants in each group ranged from 5 to 9, with an age range between 13 and 18 years of age.

	<i>Date of trip (2015)</i>	<i># of participants</i>	<i>Age range (Avg)</i>	<i>% Female</i>	<i>% Male</i>	<i>Mindfulness</i>
<i>Group 1</i>	May 6-10	8	14-16 (15.13)	25%	75%	No
<i>Group 2</i>	May 16-20	9	16-18 (16.78)	56%	44%	Yes
<i>Group 3</i>	June 4-9	6	14-16 (15.13)	0%	100%	Yes

Table 1: Group demographics

3.1.5 Participant Selection and Group Demographics

Participants were selected from students partaking in the SMUS Outdoor Education (SMUS OEd) program. Each year, students from grade 8 through 11 participate on an outdoor trip or experience. They are given a list of options, ranging from front country day trips to in-depth 5-day trips in the backcountry. They rank their top three choices and the trips are selected by the SMUS OEd staff.

During the research period, between May and June, there were three hiking trips planned. I was given permission by SMUS staff to attend these trips. SMUS OEd staff emailed the participants and their guardians with information about the research and consent forms. The researcher did not directly influence or participate in the selection process. By the date of departure for the trip, any student who had returned their consent form, signed by a parent or guardian, was considered a participant. As a result, there were students on the hiking trips who were not participants in the research. Some participants withdrew from the research during the interview stage and their information/data is not included in this research.

3.1.5a Limitations of Group 3

There are number of limitations in the use of data from Group 3. Firstly, there are no female participants in Group 3, due to the selection process by SMUS. Secondly, though the route plan was to hike a majority section of the Juan de Fuca trail, the actual route plan changed significantly due to negative group dynamics. The result is that this group did not hike the same route as the other two groups, making a direct comparison difficult. Thirdly, though the research

plan called for Group 3 to have a mindfulness component, group dynamics prevented a consistent mindfulness protocol from taking place. And lastly, upon examination of the survey and questionnaire data from Group 3, it is obvious that this component was not taken seriously by many participants, with only one column filled out or entire pages left blank, casting into doubt the validity and consistency of their data. Therefore, until the Discussion section, Group 3 data will be excluded from the analysis.

3.2 Research Structure, Data Collection and Analysis

3.2.1 Survey and Five Facet Mindfulness Questionnaire (FFMQ)

Before their trip, participants completed a survey, constructed by the researcher, to provide some basic biographic and demographic information and insight into their past nature experiences (in-depth and otherwise) and current and past mindfulness practices, such as meditation and including activities such as yoga, as they have an aspect of mindfulness central to the activity. Along with this survey, participants completed the FFMQ.

The FFMQ was used to establish a baseline level of trait mindfulness for the participants before the trip to help distinguish between insights discovered through mindfulness during the research or as a result of inherent levels of mindfulness in the participants.

3.2.2 Pre-Trip Mindfulness Training and Mindfulness Practice On-Trip

Group 1 did not have a mindfulness component to their trip. Group 2 and 3, however, were given a short (15 minute) introduction to mindfulness during their pre-trip meeting. Mindfulness meditation was referred to as a *sit spot* to avoid any unwarranted religious

connotation – this is a secular practice – and as it is a simplified form of mindfulness protocol, designed for beginners with little to no mindfulness experience.

During the trip, Group 2 and 3 were instructed to participate in a *sit spot* in the morning before they began hiking. The *sit spot* lasted for a duration of 10-minutes. They were instructed to find a spot where they could not see any of the other group members or other people on the trail. They were told to focus on their breath with their eyes open, focus a few feet ahead, in a seated, neutral, and comfortable position. When they felt that they were relaxed and focused on their breath, they were asked to expand their awareness to their surroundings and themselves without moving. If thoughts or distractions were to enter their mind, they were instructed to acknowledge them, though not fixate upon them, and return their attention to their breath until they were focused once more.

The *sit spot* meditation practice is modelled after the Mindfulness-Based Stress Reduction (MBSR) program developed by Jon Kabat-Zinn (1982), though it excludes the use of yoga found in MBSR protocol.

3.2.3 On-Trip: Field Notes & Observations

I, as researcher, attended all three trips with the students and their guides to collect observations and take field notes. Information regarding weather conditions, temperature, quality of the trail (it may vary for each trip due to use and weather), events such as encounters with other people and wildlife, and group dynamics. Identifying information has been removed, and non-participant observations were generalised and used in establishing group experiences and dynamics. This is in keeping with participant observation protocols (DeWalt & DeWalt, 2011). Objectivity was attempted, though could not be completely achieved. In examining social events

and information, all participants affect the outcomes, events, and their meaning. By attending the trips, I had an effect on how it is experienced, and so objectivity cannot be truly achieved (Charmaz & Belgrave, 2012).

3.2.4 Semi-Structured Interviews & Follow-Up Interviews

At the conclusion of each trip, semi-structured interviews were individually conducted with the participants to examine their personal experiences and gather information regarding how the trip may have affected their attitudes towards the natural world. In the case of group 2, questions regarding the use of mindfulness and its impact on their connection to the natural world and trip experiences were asked.

Interviews occurred on SMUS campus during the school day. As stated earlier, questions were constructed along the lines of previous research, particularly in the fields of nature relatedness, connectedness with nature, and mindfulness (see: Bragg et al., 2013; Nicholls & Gray, 2007; Nisbet et al., 2008; Okada et al., 2013; Rogers & Bragg, 2012; Trace, 2004; Zelenski & Nisbet, 2012; Zylstra et al., 2014).

Finally, in September and October of 2015 follow-up interviews were conducted with the participants in each group. Three to four months separated the initial trips and interviews. This timeframe is not particularly long, and so this is merely an exploratory look at the question of longevity of nature experiences and the influence of mindfulness. Greater lengths of time should be examined in future studies to further clarify the impact, if any, that mindfulness has on nature experience durability, depth and effect.

3.3 Results

In total, 23 adolescents participated on the hiking trips, questionnaire, survey, and interviews (however, Group 3, as mentioned, will be excluded from the analysis due to inconsistencies in their data. Group 3 will be included in the final discussion). These participants ranged in age between 14 and 18, with the average age of 15.77. Of these participants, 70% were male and 30% were female. These 23 participants were split between three groups. Though all students lived in Canada at the time of the research, there was a large number of nationalities represented. In the three groups, there were students from, China (and Hong Kong), Taiwan, South Korea, South Africa, Vietnam, Mexico, in addition to Canada and the United States. Therefore, there were a number of different cultural and experiential backgrounds coming into the trip. All but two participants were from very heavily urbanized areas.

3.3.1 Five facet mindfulness Questionnaire (FFMQ)

The leading purpose behind using the FFMQ was to use it to compare interview data and field notes to quantitative data to see if it supported mindful and environmentally responsible behaviours. For example, if a participant was particularly insightful and reflective, did their FFMQ reflect this quality? All 23 participants took the FFMQ, 8 in Group 1, 9 in group 2 and 6 in group 3. A higher FFMQ score is indicative of greater overall trait mindfulness. The total score is out of 195 and broken into five subgroups that are facets of overall mindfulness: observing (out of 40), describing (40), acting with awareness (40), non-judgement (40), non-reactivity (35).

Group 1: 131.63 (SD = 22.75)
Group 2: 130.00 (SD = 10.26)
Group 3 ⁵ : 122.00 (SD = 8.97)

Table 2: Average FFMQ score by group

FFMQ MINDFULNESS FACETS

	<u>Observe</u>	<u>Describe</u>	<u>Actaware</u>	<u>Nonjudge</u>	<u>Nonreact</u>	<u>Total</u>
GROUP 1	27.25	26.38	27.50	27.75	22.75	131.63
(N=8)	(sd=2.99)	(sd=6.26)	(sd=7.05)	(sd=7.07)	(sd=3.73)	(sd=21.28)
GROUP 2	27.44	25.89	29.11	26.78	20.78	130.00 (sd=9.67)
(N=9)	(sd=4.45)	(sd=3.31)	(sd=4.23)	(sd=4.69)	(sd=4.10)	
GROUP 3⁶	22.17	24.67	28.67	26.50	20.00	122.00 (sd=8.19)
(N=6)	(sd=2.41)	(sd=1.89)	(sd=4.07)	(sd=3.04)	(sd=1.53)	

Actaware = Acting with awareness

Table 3: FFMQ broken down by facet and group

As has been mentioned above, the data for Group 3 is of questionable quality. For this reason, the following will focus on groups 1 and 2.

Both groups have similar average FFMQ scores, which is unsurprising given the nearly universal lack of mindfulness experience previous to this research. What is more notable, however, is the difference in the standard deviation between the two groups. Group 1, who are

^{5 & 6} This data is questionable, as discussed above. Some FFMQ pages had only one column filled in.

younger (ages 14-16) had greater variation in their scores than did the older group 2 (ages 16-18). Group 1 ranged from 94 to 163, and Group 2, ranged from 120 to 142. This may be explained by age and maturity of the participants in the groups.

Age group	FFMQ Average
14 (n=1)	117 (sd=0)
15 (n=5)	130 (sd=27.98)
16 (n=5)	132.2 (sd=14.51)
17 (n=5)	131.8 (sd=10.11)
18 (n=1)	132 (sd=0)

Table 4: FFMQ score by age

Standard deviations grew smaller as the participants increased in age. This could be a product of age resulting in greater thoughtfulness and reflectiveness. This may be seen with Group 3, who could not complete daily mindfulness ‘sit spots’. It is possible that traditional mindfulness activities, such as meditation which the ‘sit spots’ were modeled after are more manageable by older, and more mature people. This does not mean that age is a sole contributor to mindfulness or a high FFMQ score. The average scores, both total and for each category, are similar across groups, so there are comparable scores across age groups. However, the larger standard deviation indicates that the participants had a wider range of scores in the younger age groups.

The difference in average FFMQ score was not statistically significant, though it is in line with scores of other non-meditating groups of somewhat similar age groups (Baer et al., 2008).

3.3.2 Interviews

All participants were interviewed within 10 days of the trip. The interviews were semi-structured and done individually. Group 2 received additional interview questions regarding the mindfulness experience on the trip. All preceding questions were the same between groups 1 and 2.

The interview questions were separated into categories. First, questions regarding the trip were asked. These questions established personal experience, and examined both the positive and negative. Second, questions were asked about previous outdoor experience and if they considered themselves to be a person who enjoys the outdoors. Third, participants were asked about any previous mindfulness experience, including yoga, or other activities that may have a mindfulness component. Any exposure by the participant to mindfulness was considered, such as if a parent regularly meditates, but they themselves do not, or if they practice a religion and pray or meditate in a religious capacity, then they have likely been exposed to mindfulness. Fourth, participants were asked about any environmentally responsible activities that they participate in. As the participants were adolescents, they were asked about the environmentally responsible behaviours of their parents or guardians as well. Lastly, Group 2 was asked about the daily mindfulness experience on the trip.

The following sections will examine each of these categories with associated quotes from the participants.

3.3.3 Personal experience on the trip

Every participant responded positively to the trip. A random selection of quotes from the participants demonstrates this:

“It was really fun, yeah.” (G1b, personal comm., 2015)

“Fun, but tough.” (G1f, personal comm., 2015)

“I loved it.” (G2c, personal comm., 2015)

“It was really fun. I really liked it.” (G2f, personal comm. 2015)

One of the contributing factors to this positivity was a sense of accomplishment achieved by the participants. The trail is difficult and by completing it, persevering, the participants felt strongly about their accomplishment.

“Walking on the trails, especially like, when we went uphill and finished it and looked back down at what you just did and were just like, ‘yeah, I just did that.’ That was always good.” (G2b, personal comm., 2015)

“...through some parts, it was hard [*sic*], but I’m really glad I persevered, because after I felt great to just end.” (G1e, personal comm., 2015)

“Well it was pretty tough to, like, go through mud pits and go up hills but then once we get to the top I will be like pretty proud of myself.” (G1h, personal comm., 2015)

Every participant acknowledged the difficulty of the trail, though expectations were varied. Between the two groups, 29.4% thought the trail's difficulty was *as expected*; 47.1% considered it to be *more difficult than expected*; and 23.5% thought that it was *easier than expected*. The two groups had different outcomes, however. In group 1, 12.5% thought the difficulty was *as expected*, whereas 44.4% of group 2 thought it was *as expected*. 62.5% of group 1 and 33.3% of group 2 thought the trail was *more difficult than expected*, and 25% of group 1 and 22.2% of group 2 thought it was *easier than expected*.

The notable difference is that group 2 has had more outdoor and trip experience overall than did group 1. Having realistic expectations of an outdoor trip can be a result of experience. Only three of the nine participants in group 2 had participated in a backcountry hiking trip before, however. Other outdoor trips, such as kayaking, canoeing, and winter camping, accounted for the rest of their experience.

Another contributing factor to the overall positive associations of the trip for participants, was group dynamics. The majority of participants spoke of their group in positive ways, with only one explicitly negative response, and three responses that said their group did not work well at first, but got better over time. The remaining 13 participants, of the 17 total, declared the group dynamics to be positive overall.

There were similarities in what participants found to be their most and least favoured parts of the trip. 11 of the 17 participants specifically cited down time or some aspect of down time as their favourite parts of the trip, with nine of those 11 participants specifically talking about relaxing by the campfire. Of the six participants who did not point to down time as their favourite parts, two others *could* be considered to be categorized as down time as well. One student said that the waterfalls were their favourite part, and another said that eating was their

favourite. The waterfalls on the trip were only accessed once we had stopped hiking and set up camp for the day. It was a non-strenuous activity done near camp. As for eating, most of this was done at camp. Another of the participants who did not directly cite down time declared that they could not choose one particular favourite moment, answering by saying “[I liked] everything, I guess. I really like the whole thing... I don’t have a specific thing.” (Glf, personal comm., 2015). Two others stated that they enjoyed hiking and the view-points in particular, while the last participant saying being in a new place was their favourite part.

There was general consensus about which parts were noted as the least favourite on the trip, which tended to be the mud and/or hiking up the large hills. However, some participants either cited no specific negative parts, or laughed them off, such as cooking was difficult because they were inexperienced though the food itself was good, or the drive back was their least favourite part because they got motion sickness.

In Group 1, stress and anxiety played a very small role for the participants. Three of the eight participants noted some stress about the trip before the trip occurred. All three referenced their lack of outdoor experience as the source of their anxiety. The stress they felt was allayed during the trip.

The second group, had more cases of stress and anxiety reported, though only two participants in group 2 cited feelings of anxiety or stress leading up to the trip. These two participants cited prior negative experiences on outdoor trips as the source of their anxiety. Three of the nine participants in group 2 cited stress during the trip as a result of them having to act as leaders of the day, though the stress dissipated over the course of that day for two of the three.

The alleviation of stress and anxiety is an often-cited outcome of mindfulness and nature experience (Greeson, 2009; Hartig et al., 2003; Kabat-Zinn et al., 1992, 1998; Morita et al.,

2007). The fact that stress did not play a particularly large role in any of the trips could be attributed to this, however there is no explicit evidence of this. Participants in Group 2 were tasked with each leading a day of the hike with a partner (or two), and much of their stress was tied to this, though it did not outwardly present in any participant.

All but two participants in Group 2 stated that they often feel stressed in their daily lives. All 7 participants who said this cited school and associated work as their largest stressor. This is understandable in comparison with Group 1 and Group 3 who are in younger grades and have a lesser course- and work-load. All 7 participants in Group 2 who stated they had regular stress in their lives noted that they were *less* stressed during the trip, even if some stress was present.

Of the 17 total participants, only one stated they would not do this sort of trip again. The rest said they would, with three mentioning that they would do a similar trip if it were slightly less difficult, physically.

3.3.4 Sustainability – Environmentally Responsible Behaviour

The next section of the interviews focused on Environmentally Sustainable behaviours in the participants and their home lives. Given the make-up of the participants, with international students who spend part of their time in Canada, often in a boarding house, and part of their time in their home country, the results were varied.

All 17 participants said that they tried to act environmentally responsibly in some way. Some said they had no choice, as school and residence (for the 11 participants who lived in the SMUS boarding houses) requires students to recycle and compost. One participant noted that he was a member of the eco-club at the school, and two students said they had gardens which they

personally tended, providing some food for themselves. Two participants mentioned turning off lights, and two declared that they were adamant about preserving water by taking short showers.

As a result, it is seen that the participants all had some environmentally responsible behaviours, however only 2, or perhaps 3 at maximum, considered environmentally responsible behaviours to be a key concern in their lives.

6 of the 17 participants were from China or Hong Kong, and noted that China is very far behind in terms of individual environmental responsibility. One participant even said that, “you can’t really be sustainable in China, honestly.” (G2i, personal comm., 2015).

A participant from Mexico stated that he and his family were the only ones in their neighbourhood who recycled and that the school he went to previous to moving to Canada had just started recycling.

3.3.5 Mindfulness experience and behaviour

This section of the interviews sought to determine if the participant had any current or previous mindfulness practice. This question was asked in the pre-trip questionnaire as well, and here it was repeated to ensure that the participant would discuss all connections to mindfulness they may have, or have had in the past.

Only one participant had a regular, daily mindfulness practice. Two other participants had a semi-regular practice tied to religion. Five of the 17 participants had no mindfulness experience whatsoever, and nine of the 17 participants had had some exposure at some point in their lives. Included in exposure to mindfulness are activities that have an inherent component of mindfulness, such as yoga. Of the nine participants who had some previous exposure, all pointed to yoga for that exposure, with one also saying they had had a Buddhist monk speak in one of

their classes. All of the exposure for these nine participants was through school functions and none of the nine continued yoga or mindfulness practice in their own time.

3.3.6 Mindfulness practice during the trip

The final section of the interviews was limited to just Group 2, as it pertained to the mindfulness practice done on the trip. Group 1 did not have this component.

Participants were asked how they felt the ten-minute mindfulness practice was for them on the trip. All but one participant said they enjoyed the practice, though to varying degrees and for different reasons. One participant declared that the practice was too short for them: “It could have been longer for me, but then again for other people who have not really done this [meditation], it could have even been a stretch for them. So, it was probably appropriate.” (G2a, personal comm., 2015); while another participant said that it was too long: “It’s actually helpful, but it is too long and our body heat gets lost.” (G2h, personal comm., 2015).

The common theme in the participants was that it was a good way to start each day before the strenuousness of the hiking began and as a way to resettle after the busy morning preparation routine:

“It was good to take a break before we got going, because we were all busy, you know, packing up and getting ready, it was good to pause.” (G2e, personal comm., 2015)

“It was good. At the beginning of your day, you’re thinking, ‘oh, I need to get things done before the time to leave’, and you’re like, worried about like your tent and getting packed and stuff, but like the ten-minutes just sitting there being present and just doing nothing, like

feeling the environment around you helps. It like helps you to like get started for the hike.” (G2c, personal comm., 2015)

“I liked it. Most of the time you’re rushing to do this, rushing to do that, preparing, making food, just doing things all the time, it’s hard to just stop and just not worry or not think about anything... so just to take some time for yourself to just do nothing.” (G2g, personal comm., 2015)

All participants in Group 2 stated they would recommend this practice for other outdoor education trips, with only minor changes based on their experiences, such as moving further away from other people, or wearing warmer clothing before beginning the practice. One participant said they would support mindfulness practice in outdoor trips if there was a change to the actual protocol of the mindfulness exercise and that would be to shorten the practice.

3.3.7 Field notes

Field notes comprised of jot notes and more in-depth notations were taken by the researcher during the trip. The notes included observations of all group members, including those who were not participants in the research. Steps were taken to ensure the anonymity of the non-participants. Their data was included as each member is important to the experience of the group as a whole, and therefore the experience of the participants.

Field notes were taken of specific quotes or actions by group members if they spoke to something the researcher thought pertinent to the trip and/or research. Examples include:

“1140h: drive past clearcut on way to JdF [Juan de Fuca]. Student: ‘Whoa! We are not treating our planet well.’” (field note, 2015).

“[participant] picking away at tree bark. Asked to stop. Apologizes to tree without prompting.” (field note, 2015)

“0740h: Everyone up and prepping. Morning is clear and calm, bit chilly. Amazement at seals and view.” (field note, 2015)

Also, notes were taken if first aid was needed. On trips of this nature, the primary need of first aid is for blister care and prevention. In Group 1, over the course of the trip, there were eight instances where blister care was necessary on three participants. Once blister care is necessary, the blister needs to be examined daily. None were severe or hampered the trip. Other first aid of note: a small cut on a participant’s thumb, a splinter that was easily removed, and a rolled ankle (not serious). Group 2 had only one participant with need for blister care. There were two falls off of fallen trees, but no first aid was necessary. Not one of the participants who received first aid mentioned it in their interview. The conclusion that can be drawn from that was that the first aid situations were not a large contributing factor to the outcome of the trip for the participants.

3.3.8 Follow-up Interviews

Participants went through a second round of interviews, three to four months after the first round. Of the original 17 participants who gave first round interviews, 14 gave follow-up interviews. The three participants who did not give follow-up interviews did not return to SMUS after the summer, so their interview data could not be collected. None of these participants formally withdrew from the rest of the research.

The follow-up interview was done to examine research question three: Does mindfulness practice impact the depth and/or longevity of the outcomes of in-depth nature experiences?

Participants were asked if they participated in any outdoor activities over the summer. Then they were asked about the hiking trip they participated on for the research. Directed questions were asked about favourite and least favourite aspects, as well as if the trip had any impact on them that they are aware of. Participants in Group 2 were asked if they continued any mindfulness practice after the trip, and if they thought that the mindfulness was a useful tool for them.

Many of the participants did partake in some outdoor activity over the summer, though none of the participants had an in-depth experience, and all trips were in the front country. Answers about the favourite and least favourite aspects of the trip remained consistent, and no participants in Group 2 continued their mindfulness practice.

Overall, this stage did not produce substantial findings. As an exploratory question unasked in previous literature, the impact on longevity of nature experiences paired with mindfulness requires further examination.

3.4 Discussion

This study suggests, based on participant-observation and interviews, that mindfulness practice does, in fact, have a positive impact on in-depth nature experiences, though further study is needed to confirm these results and better understand the extent of the benefit. Group 1 was given no specific mindfulness protocol, unlike Group 2. However, both groups did have components that could be considered mindfulness experiences. As studied by Nicholls and Grey (2007) and Trace (2004), moments of ‘quiet time’ and ‘stillness’ are of vital importance to

positive nature experiences, and represent components that are central in a mindfulness practice (Gethin, 1998). In this way, both groups experienced moments of mindfulness. Each morning, and in the afternoon/evening at the conclusion of the day's hike, participants had 'quiet time' or moments to relax at the campsite surrounded by nature. They were given a time limit in which they needed to set up their tent and sleeping areas and bring out their food in preparation for dinner, but the time, particularly after the hike, was lenient and offered plenty of opportunity to relax. One participant stated that their favourite part of the trip was exploring the beach on the end of the second day, before setting up camp.

In fact, in both groups, down time was, by far, lauded as the favourite part of the trip. 11 of 17 participants across both groups (1 and 2) specifically cited downtime as their favourite aspect of the trip, with the majority identifying that their favourite specific moment was sitting by the campfire. It was during down time that conversations shifted from future to present tense most often, with the exception of our end-of-day discussion about the upcoming day and leg of the trip. The co-guide for Group 2 made note that on day two, students were absolutely enthralled and in the moment while watching the tide come up and devour the remnants of the night's fire. This example, and the shift from future to present tense in the considerations of the participants is worthy of note as it is a key component to mindfulness practice. Being present in the moment stands at the heart of Kabat-Zinn's definition of mindfulness (see: Kabat-Zinn, 2003, p. 145).

However, only Group 2 had a specific and purposeful mindfulness component to the trip. Each morning, before setting off on the day's hike, participants sat for a 10-minute mindfulness meditation 'sit-spot'. The participants were instructed to focus on their breathing until they were calm and present. Then, they could expand their attention to their surroundings, the sound of

crashing waves, sea birds and mammals, wind, and so on, as well as the present experience of their bodies, such as if any part of them was sore from hiking, or if they had slept well or poorly the night before. Participants were instructed to acknowledge any intruding thoughts, letting them pass, and returning to the moment or their breathing. This is in line with the mindfulness practice used in Kabat-Zinn's Mindfulness Based Stress Reduction program (MBSR) (Kabat-Zinn, 1982; Kabat-Zinn et al., 1992, 1998)

The key differences between groups was that Group 1 focused more on the future than did Group 2. Group 1 frequently asked questions, such as: "Is the next hill larger than this one?", "Is the next hill steeper?", "Is tomorrow going to be more difficult than today?", "What day is the most difficult?" (Field notes, 2015). Group 2 did ask these questions, but much less frequently. Their focus remained more present and they depended less on the guides. This is notable for a number of reasons. For one, being present and in the moment is a key component to mindfulness practice (Kabat-Zinn, 2003). Second, that Group 2 was more present suggests that the mindfulness practice had a tangible outcome. Between Group 1 and 2, there is not a substantial difference in their average FFMQ scores (Group 1: 131.63; Group 2: 130.00). In fact, Group 1 has a higher score, suggesting the group was more mindful on average. However, Group 2 demonstrated themselves to be more present and in the moment, indicating the possibility that their mindfulness practice did make a difference in their experience, at least in the short term.

When group 2 was asked about their mindfulness practice, all but one participant said they enjoyed it. The lone participant who did not enjoy it personally said it was a useful tool in general. The key factors for the participants who enjoyed the practice was that it gave them a moment to relax and mentally prepare for the day of hiking ahead of them, and that it helped them to notice the nature around them. Many specifically cited how much they enjoyed the

sounds of the birds and waves they heard during their sit spot, that they didn't necessarily pay attention to before.

“...and you get to listen to things around you and you can observe.” (G2d, personal communication, 2015)

“just sitting there, being present and like just doing nothing but just like feeling the environment around you helps.” (G2c, personal communication, 2015)

What is most clear to me, as researcher, is that mindfulness does have some impact on the overall nature experience. It allows the participant to pay closer attention to where they are, noticing their surroundings, the sounds, smells, and other sensations that they had otherwise overlooked while they were busy or in their own headspaces. Furthermore, it gives an opportunity to step back and prepare for the difficulties of in-depth outdoor experience. Mornings on multi-day hiking trips tend to have a rushed quality and every action of preparation for the day can feel like a race. Sleeping bags and mats must be packed, tents taken down, food recovered from hangs or caches, breakfast made and then cleaned, and packs filled and adjusted, to list some of the morning routine. Once a group is ready, the typical next step is to begin hiking. The feeling of rushed preparation lingers. Mindfulness before setting off permits a moment of reflection that can allow for mental preparedness in addition to the physical preparedness, and can allay some of the feeling of being rushed.

However, during the research, it became abundantly clear that there are a number of organic ways mindfulness can be found on an in-depth nature experience. The abovementioned

‘quiet time’ or ‘stillness’ comes naturally after a long day of hiking (or kayaking, canoeing, ski-touring, etc.) It can be found while sitting around a fire or while exploring the area around camp, or just sitting in one’s tent for a moment to relax, for example. One potential reason campfires may have been listed as such a popular aspect of the trip for the participants is that it holds an innate fascination for many (Lynn, 2014). Kaplan & Kaplan (1989) suggest that fascination utilizes involuntary attention, which requires no concerted effort and is restorative to the mind’s overall functioning and processing. Moreover, watching a campfire has been compared to mindfulness activities, and may relay some of the same benefits of mindfulness behaviour (Nicholls & Gray, 2007). Zylstra et al. (2014) also point to the importance of unstructured and creative experiences in nature, and moments of downtime tend to be unstructured and more freeform. Therefore, while mindfulness can be a useful tool during an in-depth nature experience, allowing for the organic and spontaneous moments that align themselves with mindfulness practice can permit similar benefits and outcomes.

Overall, mindfulness did have an impact on the participant experience. To examine this, I will revisit the research questions posited at the beginning of this chapter:

- **RQ1:** Does mindfulness practice on in-depth nature experiences affect attitudes towards the natural world?
- **RQ2:** Does mindfulness affect experience in nature and wilderness?
- **RQ3:** Does mindfulness practice impact the depth and/or longevity of the outcomes of in-depth nature experiences?

RQ1: Mindfulness did appear to affect attitudes towards nature on this in-depth experience. Purposeful use of mindfulness (such as with Group 2) gave the participants an opportunity to observe their surroundings and take in the environment in a way that they did not while tasked with camp and hiking duties. In their interviews, participants from Group 2 noted that their morning mindfulness sessions allowed for them to notice the natural world in a way they hadn't before. Moreover, the overall experience of the trip was improved by reducing the stress they felt from the packing and preparing stages of the trip each morning, and so they look upon the trip more favourably as a result. This is important when examining their nature experiences as a trip that went poorly may prevent the participants from going out into nature again.

RQ2: As noted above, mindfulness did also appear to positively impact participant experience in nature. The purposeful use of mindfulness offered a brief respite from the stress of the morning preparations, and so there was less stress and anxiety associated with the trip. Additionally, no participants mentioned any first aid concerns in their interviews, and as for the physical difficulties of the trip (eg. steep, frequent hills), Group 2 had fewer mentions of the physical difficulties than did Group 1. It is possible that mindfulness had an impact here, though it is not conclusive nor profound. Mindfulness may give perspective and help the participant from dwelling overmuch on these difficulties. Additionally, Group 2 had more outdoor experience than did Group 1, which may also explain the fewer comments regarding the physical difficulties of the trail.

RQ3: In regards to the longevity of the nature experience as a result of mindfulness, this question did not have a conclusive result through this study and requires further examination. This research showed no difference between the mindfulness and non-mindfulness groups.

However, this could be a result of many factors. Firstly, 3 to 4 months may not have been a long enough timeframe. It is possible that after a longer period of time, the participants could have shown a greater difference in outcome between groups. Alternatively, mindfulness is a process, and one brief introduction into mindfulness does not necessarily result in particularly evident outcomes. Studies that show profound and long-lasting outcomes from mindfulness typically focus on long-term and deeply committed meditators (Kok, Waugh, & Fredrickson, 2013; Lutz, Slagter, et al., 2008). Furthermore, long-lived and well-studied therapeutic practices of mindfulness, such as MBSR treat mindfulness as a process, an ongoing exercise (Davidson et al., 2003; Kabat-Zinn, 1982; Kabat-Zinn et al., 1992). Increasing FFMQ scores is evidenced in studies of interventions that last 90-days or longer (Russell, Gillis, & Heppner, 2016). A future study could compare the longevity of nature experiences with mindfulness in a group that has a long-standing mindfulness practice and the result could conceivably be more profound.

In conclusion, it must be noted that the outcomes provided by mindfulness did not appear to be profound, though they were beneficial. Mindfulness-like outcomes were achieved without direct intent during the trips as there are moments built into outdoor experiences, such as sitting around a fire, that resulted in similar outcomes to purposeful mindfulness protocol. This is of note for the practice of outdoor experiences so that these organic moments of mindfulness can be included and promoted, and even bolstered through more intentional mindfulness practices.

Though the outcome was not as substantial as hypothesized, the use of mindfulness on nature experience needs to be further examined to determine if this is a result of the study, or of mindfulness itself. Variations on the mindfulness protocol can be examined, as well as duration and time of day of the practice (e.g. in the evening, rather than the morning). The population can also be examined to determine if mindfulness has any greater benefits to nature connection.

Populations with varying levels of previous mindfulness experience may provide different outcomes, as well as different age groups and demographics. The participants in this study were adolescent and attended an internationally renowned private school. Therefore, their opportunity for attending an outdoor education program is vastly increased, however most of their actual outdoor experience was limited, largely due to lifestyle (e.g. affluent families living in extremely large urban centres such as Beijing or Hong Kong). Furthermore, there was wide variety of nationalities represented (Hong Kong and China, Taiwan, Mexico, South Korea, Vietnam, the United States, and Canada). Different cultures and socioeconomic levels can have an impact on understanding of nature and one's place in the natural world, as well as how closely one associates with nature. The participants from Hong Kong and China, for example, noted the lack of attention to environmentalism within the average citizen there, stating that recycling and composting doesn't really occur on a personal level. Large urban areas, such as the areas where the participants were from in Asia, lack easy access to the natural world. Altering these demographics may result in different outcomes. Lastly, these trips were fairly uniform and under very good conditions. Different styles of trips (kayaking, ski-touring, canoeing, etc. rather than hiking) and under different conditions such as poor weather could have different outcomes as well.

One potential example for a future study could be approached in the following way: a group of participants with different levels of mindfulness (no experience, limited, expert meditators) on an outdoor experience following a mindfulness protocol. Do the different levels of mindfulness impact the experience in any way?

Furthermore, to examine the question of longevity of nature connection through mindfulness (RQ3), a study could examine different lengths of time between the in-depth nature

experience and the follow-up. The group could be divided into a sample (who did not continue mindfulness practice after the trip) and those who did continue their practice after the completion of the trip. Does the continued practice of mindfulness affect the longevity?

Additionally, it is yet not known if outcomes of combined nature experience and mindfulness results are compounded. Further research on this matter is needed through quantitative study of such markers as salivary cortisol levels and/or brain scans, which have proven useful in demonstrating outcomes of both nature connection and mindfulness in past research (J Lee et al., 2011; Lutz, Brefczynski-Lewis, et al., 2008; Park, Tsunetsugu, Kasetani, Kagawa, & Miyazaki, 2010).

As it can be seen, there are a number of ways that this topic can be further examined, and that this preceding research is merely an exploratory step into determining the efficacy of mindfulness on nature connection.

Based on this qualitative research my conclusion is that the purposeful use of mindfulness is an effective tool, as it focused and oriented the participants towards the environment around them. In this way, they were more perceptive and attuned to the natural world than they were before the practice. This is key to connecting with the natural world. Furthermore, I believe that the use of intentional mindfulness practice helped the participants with the stress and anxiety that can be associated with aspects of in-depth nature experiences. Specifically, the morning routine of packing and preparing for the ensuing day. The mindfulness practice broke up this routine in a way that allowed the participants to ‘reset’ or ‘refresh’ themselves before setting out on the hike, preventing them from carrying that anxiety and stress with them throughout the day. There could be other activities or practices used to similarly break up the morning routine, however mindfulness’s studied utility as a device against stress and

anxiety give it particular credence for this purpose. This particular outcome can be very useful to the practical fields that closely associate with nature, such as Wilderness and Adventure Therapy and outdoor education. This, along with the organic moments of mindfulness are, in practice, efficacious.

3.5 Limitations

There were a few limitations to this research, though most did not present challenges large enough to call the validity of the data into question. Each group hiked the trail at different times, which would typically prevent an identical experience. However, the weather cooperated and remained similar in temperature and condition across all three groups. Another limitation, which is present in all participant observation research, is that it is impossible to remove the researcher's biases and influences from the study (DeWalt & DeWalt, 2011).

The largest limitations in this study had to do with Group 3. As the groups were pre-selected by SMUS, Group 3 was made up entirely of male participants which was not in keeping with the mix of the other two groups. This group had negative social dynamics that prevented the hiking of the entire trail, also breaking from the procedure followed by the other two groups. The mindfulness protocol used by Group 2 did not work for Group 3 as the participants were unable to sit for long enough without distracting each other or themselves. This is a reflection on the group, but also a limitation on use of mindfulness based on age and maturity. This group was comprised of grade 8 students, and though their average age was the same as Group 1 (average

of 15.13 years old), they demonstrated less maturity than did Group 1, which was comprised of grade 9 students. It is possible that the grade difference resulted in differences of maturity. For Group 3, it was evident that having them sit for ten minutes was too long. Lastly, the survey data and questionnaires completed by Group 3 showed a lack of interest in the research. A number of the questionnaires had only one column filled out for all of the questions and a few pages of participant's surveys were left blank. The usefulness of their data was put into question as a result and was not used.

Chapter 4 - Conclusion:

Human disconnection from the natural world is considered by some to be at the heart of global environmental crises (see: Nisbet et al., 2009; Pyle, 2003; Scull, 1999; Zylstra et al., 2014). Therefore, reconnection with nature has been suggested as an important means of working against climate change and other environmental crises. The Euro-American assumption that humans stand apart from nature has led to a vast number of environmental concerns and catastrophes, from over-exploitation of resources, to species extinction, to the misuse of damaging chemicals. A re-association with the natural world may prove useful, and even vital, in mitigating these deleterious activities and their detrimental impacts upon the planet by instilling a desire to protect the natural places with which a person feels connected.

Human/nature association has been linked with extensive benefits aside from the potential for increased environmentally responsible behaviours (Frumkin, 2001; Hartig et al., 2003, 1991; Kaplan & Kaplan, 1989; S. Kaplan, 1995; Kuo & Sullivan, 2001; Morita et al., 2007; Ohtsuka et al., 1998; Pretty, 2004; Ulrich, 1983, 1984; Zelenski & Nisbet, 2012). Moreover, Edward Wilson, and others who subscribe to his Biophilia Hypothesis, understand humans to have a biological and evolutionary imperative to associate with the natural world, and to deny this association does us harm (Heerwagen & Orians, 1993; Kellert & Wilson, 1993; Ulrich, 1993; Wilson, 1984). Therefore, with this understanding, connection with nature can be understood to be of benefit to human well-being with or without an environmental motive.

My own personal connection with the natural world can be traced to the outdoor education course I took in high school. The repeated opportunity to immerse myself in the natural world proved to be enormously influential in my life, resulting in changes in behaviour and general direction of my life. I can trace, with little effort, my current occupation as an

outdoor educator and guide, my lifestyle, and my decision to pursue my graduate degree in Environmental Studies to my time in the Outdoor Education course. Zylstra et al. (2014) outline three dimensions that contribute to connectedness with nature: cognitive, affective, and experiential. The cognitive dimension is that of learning about nature, the gaining of information through, typically, formal curricula. The affective dimension is less concrete and focused on gaining a sense of oneness and belonging with the natural world; an emotional bond. The final dimension is that of experience, where contact and interaction with the natural world help to foster connectedness with nature.

I encountered each dimension during the Outdoor Education course. In the cognitive dimension, in classroom sessions before trips, we were taught of the local environment. Our guides and instructors further imparted their knowledge unto us. They pointed out the difference between species, distinguishing between types of trees, giving us an understanding of the biodiversity of our surroundings, letting us see the forest as more than just a single entity. We learned to tell apart the tracks of a wolf and that of a cougar, how to respond to a bear, and were told to look up once and a while to see woodpeckers, whiskey jacks, and eagles.

These experiences cultivated our amazement and appreciation of the world that surrounded us. I felt humbled in the face of looming mountains, too high to comprehend, and at the force of swell amplified by pacific storms. I loved, and continue to love, the places to which we journeyed during that course; that near-wild nature. This affective dimension, the emotional bond to a place was fostered further and further each day we spent outdoors, and on each subsequent trip.

The experiential element is the easiest to see in this context. We were immersed directly into the natural world. It was a requirement of the course; indeed, it was the course. We touched

the trees in the forest, got dirt and mud on our boots and clothes, felt the rain in spite of our Gore-Tex, spent the night in shelters made of snow, and breathed deep the salty air of the coast.

Each dimension feeds the others in a symbiotic relationship. My understanding of the environment in which I was immersed gave me context for what I experienced. I could look out on a mountain and see the chutes that avalanches would follow in the winter and rock falls in the summer, the scree and debris piled at the base. I could marvel at the tremendous strength of trees that withstood these events, or the trees and bushes that grew on isolated crags too steep to climb unaided, their roots clutching to whatever accumulation of soil had gathered there.

Understanding the trees allowed me to better comprehend how ancient some of the spruce, fir, and cedar were along the coast. Great towers too wide for our hiking group to encircle and too tall for us to see their crowns, lost in the rest of the foliage. In the mountains, we could marvel at the alpine larches and their yellow needles, knowing that we were some of the few that had the opportunity to see them as their range is at such high elevations away from many population centers. This appreciation borne from deeper understanding and the cognitive dimensions of my connection with nature fed my bond with the natural environment that surrounded me. And my experience in these remote places, the act of being there, promoted my awe of the place, my connection with it. Each dimension fed into the other.

It is for these reasons that I understand the impact that outdoor education, and similar programs such as wilderness and adventure therapy, has on connecting people with the natural world. This is why I chose an outdoor education program for my research.

Furthermore, through my undergraduate study, as well as my association with my supervisor, Dr. James Rowe, I have come to see mindfulness as a useful addition in creating and fostering nature connection. By itself, mindfulness has been linked to a wide range of benefits,

from reductions in stress, anxiety, symptoms of ADHD, psychosis, to improvements in general well-being, happiness, and mental functioning (see: Brown et al., 2007; Chambers et al., 2009, 2008; Ericson et al., 2014; Kabat-Zinn, 2003; Kabat-Zinn et al., 1992; Schonert-reichl et al., 2015; Shapiro, Carlson, Astin, & Freedman, 2006; Shapiro et al., 1998) Therefore, mindfulness is a worthwhile subject to pursue in its own right.

Additionally, however, mindfulness has been suggested to promote environmentally responsible behaviours, reduce consumerism, and enhance and promote intrinsic value systems, which has been suggested to benefit sustainability by allowing a person to follow their values more closely, such as adhering to an environmental ethic or reducing their impact on the natural world (Brown & Kasser, 2005; Brown et al., 2007; Ericson et al., 2014). However, it is possible that mindfulness in tandem with nature experience may further the benefit felt, and enhance connection with nature. This has been speculated by Trace (2004) and Nicholls and Gray (2007), however research done in this area has linked aspects of mindfulness, rather than the practice itself, with nature connection, and the research done linked mindfulness with nature connection incidentally, rather than intentionally as mindfulness was not a purposeful aspect of their research design.

Consequently, what I pursued in the preceding thesis was to examine mindfulness and nature connection more thoroughly and purposefully, with a distinct use of mindfulness practice. The questions I sought to answer are the following:

- **RQ1:** Does mindfulness practice on in-depth nature experiences affect participant attitude towards the natural world?
- **RQ2:** Does mindfulness affect participant experience in the natural?

- **RQ3:** Does mindfulness practice impact the depth and/or longevity of the outcomes of in-depth nature experiences?

The outcomes of this research were less dramatic than I had hypothesized, however the impact was still evident and positive.

Firstly, mindfulness proved itself to be useful in providing a short relief from the stress and anxiety associated with daily trip preparations on in-depth nature experiences. The placement of mindfulness after the busy packing up of the campsite and preparations for the day's hike helped the participants resettle and calm themselves before setting off on the challenge of that day's hike. This intentional, ten minute sit-spot meditation, also gave the participants an opportunity to more intensely take in their surroundings and the natural world, exposing them more deeply than before. Secondly, mindfulness was achieved unintentionally through built-in moments throughout the experience. Aspects of quiet time and stillness were achieved while at camp at the end of the day, particularly around the campfire. This corroborates past research (eg: Nicholls & Gray, 2007), and indicates the importance of allowing for moments of downtime in outdoor experiences. Zylstra et al. (2014) acknowledge that unstructured, creative, and playful nature experiences, such as can be found in downtime, may provide more benefit than more structured moments. 11 of 17 participants indicated downtime as their favourite moments, and 9 of those 11 participants specified fire as their favourite moment. It was in these moments of downtime when conversation shifted most noticeably to the present tense, demonstrating that the participants were 'in the moment' at these times, a staple of mindfulness practice.

Further outcomes demonstrated that the younger participants had more difficulty with the mindfulness activity and could not sit still for the 10-minute sit-spot. Additionally, the scores of the Five Facet Mindfulness Questionnaire showed the least deviation within the older participants demonstrating a greater consistency in their behaviours and mindfulness capability. This suggests that younger participants may have a more difficult time practicing mindfulness, let alone using it as a tool towards greater nature connection.

The impact of mindfulness on the longevity of the nature experience was not determined in this study and remains inconclusive. Additionally, whether the outcomes of mindfulness and nature experience compound is not yet known and further research is needed in this area. As this research is intended to be exploratory, these questions and others raised herein should provide direction for future scholarship in this area.

In sum, this thesis outlines the numerous benefits of human/nature connection and mindfulness, providing evidence for the importance and value of re-associating with the natural world, and using mindfulness techniques to further achieve this goal. The research conducted and outlined here is intended as a pilot study that can inform further studies examining the resonances between mindfulness and nature connection. The research concludes, based on participant-observation and interviews, that mindfulness is a useful tool for improving the quality of nature experiences through stress-reduction and in providing opportunity for participants to pay greater attention to their natural surroundings. Natural, built in moments of mindfulness (eg. fire and downtime) were also observed to derive similar benefits for participants and should be promoted and enhanced wherever possible. Associations with nature that are positive only further the goal of connecting with the natural world and cultivating a desire for stewardship.

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Appendix A: Group 1 Consent Form

Connectedness with nature and mindfulness on in-depth nature experiences with adolescents: an exploration of a combined approach to combat crises in environmental and human health

You are invited to participate in a study entitled, *Connectedness with nature and mindfulness on in-depth nature experiences with adolescents: an exploration of a combined approach to combat crises in environmental and human health*, that is being conducted by Jake McCloskey.

Jake McCloskey is a graduate student at the University of Victoria in the School of Environmental Studies and can be contacted by phone at [REDACTED] or by email at [REDACTED].

This research is being conducted to satisfy, in part, the requirements for a Masters degree in the School of Environmental Studies at the University of Victoria. It is being conducted under the supervision of Dr. James Rowe, who you may contact by email at [REDACTED].

Objectives and Importance of this Research

The purpose of this research is to examine in-depth nature experience and mindfulness on connection with nature. Research shows that a connection with nature is a strong indicator of environmentally responsible behaviour. This study aims to determine whether or not the use of mindfulness practice on in-depth nature experience can help nurture a connection with nature for a stronger environmental ethic.

Participant Selection

You are being asked to participate in this study because you will be participating on a SMUS hiking trip on the Juan de Fuca trail.

What is involved if you agree to participate?

If you agree to participate in this research, you will be given a brief survey and questionnaire to fill out. These will ask you simple questions about your past experience in nature and past and present mindfulness activity. The researcher will participate on the trip with you, making observations and taking field notes. Observations and field notes taken during the trip will record information about group activities, and all group members will be observed, even if they decline to participate. No personal or identifying information will be recorded, as the purpose of the observations is to examine the group, not the individual. After the trip, you will participate in a short interview about the experience. In September or October, you will be asked if you wish to do a follow-up interview to see how time may affect the experience. No purposeful mindfulness activity (meditation, for example) will taught or practiced on this trip.

Inconvenience

Participation in this study may cause some inconvenience to you, including a time commitment to complete the interviews and surveys.

Risks

There is inherent risk in participating on the SMUS outdoor education trips, however there is no additional foreseeable risk as a result of your participation in this research.

Benefits

There are many benefits to be had from experience in nature that you may receive on the trip, including, but not limited to, a unique and memorable experience, reduced stress and anxiety, and increased subjective wellbeing. If a connection with nature is indeed achieved, this may result in increased sustainable behaviour.

Voluntary Participation

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without consequence or explanation. If you withdraw, you will be asked if you wish for your individual data to be destroyed. You may contact the researcher or the Outdoor Education department if you wish to withdraw at any time before or during the research, and after the completion of the research up until the completion of the Masters thesis that will make use of the collected data.

Researcher's Relationship with Participants

To help prevent undue influence over your decision to participate, the following steps to prevent coercion have been taken:

- This information and consent form has been presented to you by email or by the Outdoor Education department so that you may be informed about the research without undue pressure from the researcher.
- The researcher has been removed from any evaluation process related to this research.
- No grades or reports will be affected by your decision to, or not to, participate.
- You can withdraw from the study at any time by contacting Jake McCloskey ([REDACTED]) or [REDACTED], Mr. Craig Farish ([REDACTED]), or Mr. Pete McLeod ([REDACTED])

Anonymity

All names will be changed to protect your anonymity. Any identifying characteristics may be changed to protect your identity. You should note that SMUS is small enough that you may be identifiable to other students or staff, but personal information will be kept anonymous and private.

Confidentiality

The confidentiality of physical data will be protected in a locked filing cabinet. Digital data will be held in a password protected computer storage device. Only the researcher will have access to personal and secured data.

Dissemination of Results

It is anticipated that the results of this study will be shared with others in the following ways: in a thesis for partial completion of requirements for my Masters degree in Environmental Studies at the University of Victoria, in an information session for the participants, in published articles appearing in scholarly journals, and in conference presentations. Insights from the study may be shared in the school community to inform the development of the Experiential and Outdoor Education programs. By request, you can have all or portions of what you said excluded from such reporting.

Disposal of Data

Data from this research will be kept for use in further research unless otherwise requested.

Appendix B: Group 2 and 3 Consent Form

Connectedness with nature and mindfulness on in-depth nature experiences with adolescents: an exploration of a combined approach to combat crises in environmental and human health

You are invited to participate in a study entitled *Connectedness with nature and mindfulness on in-depth nature experiences with adolescents: an exploration of a combined approach to combat crises in environmental and human health*, that is being conducted by Jake McCloskey.

Jake McCloskey is a graduate student at the University of Victoria in the School of Environmental Studies and can be contacted by phone at [REDACTED] or by email at [REDACTED].

This research is being conducted to satisfy, in part, the requirements for a Masters degree in the School of Environmental Studies at the University of Victoria. It is being conducted under the supervision of Dr. James Rowe. You may contact my supervisor by email at [REDACTED].

Objectives and Importance of this Research

The purpose of this research is to examine in-depth nature experience and mindfulness on connection with nature. Research shows that a connection with nature is a strong indicator of environmentally responsible behaviour. This study aims to determine whether or not the use of mindfulness practice on in-depth nature experience can help nurture a connection with nature for a stronger environmental ethic.

Participant Selection

You are being asked to participate in this study because you will be participating on a SMUS hiking trip on the Juan de Fuca trail.

What is involved if you agree to participate?

If you agree to participate in this research, you will be given a brief survey and questionnaire to fill out. These will ask you simple questions about your past experience in nature and past and present mindfulness activity. During the pre-trip meeting, you participate in a simple mindfulness workshop. Firstly, this will take the form of a mindful eating activity to show that mindfulness is not something mystical. And secondly, you will be taught a simple meditation where you focus on your breath to ground yourself and be present in the here and now. This mindfulness practice is non-religious and is not intended to be spiritual. The researcher will participate on the trip with you, making observations and taking field notes. Observations and field notes taken during the trip will record information about group activities, and all group members will be observed, even if they decline to participate. No personal or identifying information will be recorded, as the purpose of the observations is to examine the group, not the individual. Each morning, the group will do a brief meditation before hiking. After the trip, you will participate in a short interview about the experience. In September or October, you will be asked if you wish to do a follow-up interview to see how time may affect the experience.

Inconvenience

Participation in this study may cause some inconvenience to you, including a time commitment to complete the interviews, surveys, and practice the mindfulness exercise.

Risks

There is inherent risk in participating on the SMUS outdoor education trips, however there is no additional foreseeable risk as a result of your participation in this research.

Benefits

There are many benefits to be had from experience in nature that you may receive on the trip, including, but not limited to, a unique and memorable experience, reduced stress and anxiety, increased subjective wellbeing,

compassion and empathy, and self-awareness. If a connection with nature is indeed achieved, this may result in increased sustainable behaviour.

Voluntary Participation

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without consequence or explanation. If you withdraw, you will be asked if you wish for your individual data to be destroyed. You may contact the researcher or the Outdoor Education department if you wish to withdraw at any time before or during the research, and after the completion of the research up until the completion of the Masters thesis that will make use of the collected data.

Researcher's Relationship with Participants

To help prevent undue influence over your decision to participate, the following steps to prevent coercion have been taken:

- This information and consent form has been presented to you by email or by the Outdoor Education department so that you may be informed about the research without undue pressure from the researcher.
- The researcher has been removed from any evaluation process related to this research.
- No grades or reports will be affected by your decision to, or not to, participate.
- You can withdraw from the study at any time by contacting Jake McCloskey ([REDACTED]) or [REDACTED], Mr. Craig Farish ([REDACTED]), or Mr. Pete McLeod ([REDACTED])

Anonymity

All names will be changed to protect your anonymity. Any identifying characteristics may be changed to protect your identity. You should note that SMUS is small enough that you may be identifiable to other students or staff, but personal information will be kept anonymous and private.

Confidentiality

The confidentiality of physical data will be protected in a locked filing cabinet. Digital data will be held in a password protected computer storage device. Only the researcher will have access to personal and secured data.

Dissemination of Results

It is anticipated that the results of this study will be shared with others in the following ways: in a thesis for partial completion of requirements for my Masters degree in Environmental Studies at the University of Victoria, in an information session for the participants, in published articles appearing in scholarly journals, and in conference presentations. Insights from the study may be shared in the school community to inform the development of the Experiential and Outdoor Education programs. On request, you can have all or portions of what you said excluded from such reporting.

Disposal of Data

Data from this research will be kept for use in further research unless otherwise requested.

Contact Information

You may contact the following people regarding this study:

Jake McCloskey:
Dr. James Rowe:
Craig Farish:
Pete McLeod



In addition, you may verify the ethical approval of this study, or raise any concerns that you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Your signature below indicates that you understand the above conditions of participation in this study and that you have had an opportunity to have your questions answered by the researcher.

_____	_____	_____
Name of Participant	Signature	Date (day / month / year)
_____	_____	_____
Name of Legal Guardian	Signature	Date (day / month / year)

Appendix C: Initial Participant Survey

Biographical Information

1. What is your month and year of birth?

_____/_____
Month Year

2. What gender do you identify as? (eg. male, female, transgender, etc.)

3. Are you a boarding student or a day student?

4. Are you from Canada? (circle one)

Yes / No

- a. If you were **not** born in Canada, where are you from, and how long have you lived here?

Nature Experience

1. Have you participated on a SMUS outtrip in the past (Circle one)?

Yes / No

- a. If yes, which trip(s)? (please also include the grade you were in)

1. _____

2. _____

3. _____

2. Do you and/or your family do activities (eg. Camping, skiing, hiking, fishing, walks at a local park, etc.) in the outdoors often? (circle one)

Yes / No

- a. If yes, what activities and how often (eg. twice a year *or* every month *or* three times a season, etc.)
- b. If no, do you or your family do any activities outdoors at all?
3. Have you ever participated in a summer camp that is nature-related? (eg. YMCA Camp Thunderbird, UVIC Vikes Adventure camp, etc.) (Circle one)

Yes / No

- a. If yes, what was the camp, when was it, and for how long?
- i. Camp name: _____
- ii. When: _____
- iii. For how long: _____
4. Do you have a favourite location in nature, or favourite type of nature? (eg. My favourite place in nature is Long Beach, in Tofino! *or* My favourite type of nature is the mountains in Alberta)
- a. Why is this place important to you?

Mindfulness Practice

1. Do you currently meditate? (religious or otherwise) (circle one)

Yes / No

- a. If yes, describe your meditation practice:

2. Have you meditated in the past? (religious or otherwise) (circle one)

Yes / No

- a. If yes, describe your meditation practice:

3. Do you do yoga or any similar activities (eg. Tai Chi, Qigong, etc.)? (circle one)

Yes / No

- a. If yes, what kind (eg. Hatha, Bikrum, etc.) and how frequently?

4. Do your parents meditate or practice activities such as yoga or Tai Chi? (circle one)

Yes / No

- a. If yes, who and describe their practice to the best of your knowledge:

Appendix D: Five Facet Mindfulness Questionnaire

INSTRUCTIONS:

Please write your name on *each page*. Rate each of the following statements using the scale provided.

		Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
1	When I'm walking, I deliberately notice the sensations of my body moving.					
2	I'm good at finding words to describe my feelings.					
3	I criticize myself for having irrational or inappropriate emotions.					
4	I perceive my feelings and emotions without having to react to them.					
5	When I do things, my mind wanders off and I'm easily distracted.					
6	When I take a shower or bath, I stay alert to the sensations of water on my body.					
7	I can easily put my beliefs, opinions, and expectations into words.					
8	I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.					
9	I watch my feelings without getting lost in them.					
10	I tell myself I shouldn't be feeling the way I'm feeling.					
11	I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.					
12	It's hard for me to find the words to describe what I'm thinking.					
13	I am easily distracted.					
14	I believe some of my thoughts are abnormal or bad and I shouldn't think that way.					

		Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
15	I pay attention to sensations, such as the wind in my hair or sun on my face.					
16	I have trouble thinking of the right words to express how I feel about things.					
17	I make judgements about whether my thoughts are good or bad.					
18	I find it difficult to stay focused on what's happening in the present.					
19	When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.					
20	I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.					
21	In difficult situations, I can pause without immediately reacting.					
22	When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.					
23	It seems I am "running on automatic" without much awareness of what I'm doing.					
24	When I have distressing thoughts or images, I feel calm soon after.					
25	I tell myself that I shouldn't be thinking the way I'm thinking.					
26	I notice the smells and aromas of things.					
27	Even when I'm feeling terribly upset, I can find a way to put it into words.					
28	I rush through activities without being really attentive to them.					

		Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
29	When I have distressing thoughts or images I am able just to notice them without reacting.					
30	I think some of my emotions are bad or inappropriate and I shouldn't feel them.					
31	I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow.					
32	My natural tendency is to put my experiences into words.					
33	When I have distressing thoughts or images, I just notice them and let them go.					
34	I do jobs or tasks automatically without being aware of what I'm doing.					
35	When I have distressing thoughts or images, I judge myself as good or bad, depending on what the thought/image is about.					
36	I pay attention to how my emotions affect my thoughts and behaviour.					
37	I can usually describe how I feel at the moment in considerable detail.					
38	I find myself doing things without paying attention.					
39	I disapprove of myself when I have irrational ideas.					

Source:

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27–45. doi:10.1177/1073191105283504

Appendix E: Semi-Structured Interview Questions

For All Groups:

1. How did you find the trip? (Establishing Personal Experience)
2. How were you feeling about the trip before we left? (Nervous? Excited?)
3. Was the trip as you expected?
 - a. If not, how was it different?
4. Can you describe your experience? (Establishing Personal Experience; freeform, let them determine what this question means)
5. How would you describe the group dynamics on the trip? Was the group generally positive? Or did they complain a lot? Etc. (Establishing Personal/Group Experience)
 - a. Can you give me an example?
6. Have you done another SMUS outtrip before? (Establishing Personal Experience)
 - a. How did this trip compare with that one? (Establishing Personal Experience; Positive/Negative Associations)
7. What was your favourite part of the trip? Of the trail? (Positive Associations)
 - a. Can you describe it?
 - b. Why was this event your favourite?
8. What was your least favourite part of the trip? Of the trail? (Negative Associations)
 - a. Can you describe it?
 - b. Why was this event your least favourite?
9. What was the hardest thing about the trip? (Negative Associations; Experience; is this different?)
 - a. Can you describe it?
10. Did you feel stressed out or anxious ever on the trip?
11. What kinds of wildlife did you see? (Experience)
 - a. Do you know anything about that animal/plant? (Establishing previous knowledge)
12. Was the weather an issue on the trail? (Experience)

13. Would you do this sort of trip again? (Positive/Negative Associations)
14. Did you learn anything in particular on the trip?
15. Would you consider yourself an 'outdoorsy' person?
16. Would you consider yourself a sustainable person?
 - a. Why? Or why not?
 - b. What practices do you do?
 - c. Is your family sustainable? Do sustainable practices?
17. Do you practice yoga?
 - a. How long have you been doing this?
 - b. Do you feel that it helps you? If so, how?
18. Do you often feel stressed or anxious?
 - a. What are some things that help this?
19. Anything else that you want to say?

For groups 2 and 3 (to be asked together with questions above):

1. How did you find the sit-spot training session? (Establishing personal experience)
 - a. Was it a positive experience/negative experience/you feel neutral towards it?
2. How did you find the sit-spots each morning on the trip? (Establishing personal experience)
 - a. What was good?
 - b. What was challenging?
 - c. Anything you would change?
3. Do you think you will continue to do sit-spots after this? (Personal Experience)
 - a. Why? Why not?
4. Would you recommend the sit-spots for other outtrip groups?

Follow-up Interview:

1. Did you do any outdoor activities since the trip/over the summer? (Establishing)

2. What do you remember being your favourite moment on the trip?
 - a. Can you describe it?
3. What do you remember being your least favourite moment on the trip?
 - a. Can you describe it?
4. Do you think about the trip?
 - a. How often?
 - b. What about the trip do you think about?
5. Do you still practice mindfulness at all? **(For groups 2 and 3)**
 - a. If so, how often? In what form?
 - b. Do you feel that it has helped you in any way?
 - i. If so, how?
6. Do you consider yourself a sustainable person? (has this changed at all?)
 - a. Why? Or why not?
7. Would you do a trip like that again?
8. Do you feel that the trip has changed you at all?