Home to Us All

How Connecting with Nature Helps Us Care for Ourselves and the Earth

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Dedication

This publication is dedicated to the children of the Earth, their brothers and sisters of all species, and the Home that supports all of Life. We offer these words and images with humility and gratitude for the spirits and elders who precede us, and with hope for vision, guidance, and responsible actions to contribute to a healthy future for all for generations to come.

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Executive Summary

This report, *Home to Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth*, presents the growing body of evidence that people's relationship with nature profoundly influences their behaviours toward the Earth. At a time when the world is confronted with growing environmental threats, better understanding the critical connection between people and nature is key to informing effective decision making, stimulating positive action, and optimizing the benefits people and communities receive from nature.

Spending time in nature is good for us—for our children's development, our overall health and well-being, the vitality of our communities, and for economic sectors. When people experience and connect with nature they are also more likely to act in ways that benefit the Earth. Therefore, as this report indicates, the importance of meaningful personal connections with nature should be considered and integrated, along with scientific knowledge, into public policies related to the environment and sustainable development.

Home to Us All is unique in that it synthesizes evidence derived from Indigenous and ancient wisdom, contemporary science, academic research, and current practice to reveal several important findings:

- Positive, direct experiences in nature during childhood and role models of care for nature by someone close to the child are the two factors that contribute most to individuals choosing to take action to benefit the environment as adults.
- People of all ages who participate in nature-based activities tend to be happier and healthier than those who do not.
- Social experiences in nature foster connectedness to each other and to nature.
- People who develop a sense of place are more likely to want to protect it and to oppose the degradation of the environment.
- Knowledge is very important but is not enough on its own to cause people to take action to benefit nature.
- Meaningful, positive experience in nature is a powerful way of developing a connection with, or love of, nature that can in turn guide people toward care for the Earth.
- Connectedness to nature is a strong predictor of positive conservation behaviour.

By establishing a focus on fostering human connectedness with nature in policies and practices across diverse sectors, we have the opportunity to improve the human condition and that of the Earth itself.

Initiatives that embody the following characteristics are particularly encouraged:

- Education and child care policies that enable time outdoors in nature and experiential learning about nature in early childhood and throughout life;
- Health and elder care policies that deliver the health benefits of contact with nature for all people of all ages;

- Community planning and urban development policies to create nature-rich cities that include parks and protected areas for the benefit of people and nature;
- Parks, outdoor recreation, and tourism policies that encourage family-friendly experiences, interpretive programmes, and outdoor, nature-based and experiential education;
- Arts and culture policies that promote the integration of culture and nature to develop a sense of oneness with nature while celebrating stories of connection and healing;
- Policies that encourage private sector investment in environmentally sustainable programming, infrastructure, and innovative solutions, such as technology, for connecting people with nature; and
- Policies that call for biodiversity conservation organisations to work across sectors so that all people, equitably and inclusively, experience the diverse benefits of connectedness with nature.

Additional guidelines for practice:

- Use a variety of tools, including social media and community-based social marketing, to encourage those with high levels of connectedness to communicate and share their values and experiences with others, including children and youth, and to engage those not yet connected with nature.
- Allow for immersion and frequent experiences of caring for nature to encourage the growth of perceived efficacy, knowledge, connection and commitment over time.
- Prepare people of all ages to transfer their learnings about responsible environmental practices from their experiences in what may be distant settings, such as field trips and wilderness adventures, to their everyday lives at home.
- Recognise that people hold a variety of values related to nature, so design and implement policies and practices that will resonate with those values.
- Help people do what they already do, such as having a social gathering or a meeting, but do it outdoors.
- Make it easy, make it social, and make it fun for people to connect with nature.

The evidence is clear. One of the most important things that any of us can do for ourselves, those we love, people throughout the world, and the living systems that support us all is to connect with nature. That connection can start in the simplest of ways, beginning in childhood and renewing through all the stages of life. It can take many forms, and occur in many ways. It requires places and spaces for people to connect with nature's richness and complexity from backyards to apartment rooftops, on city streets and rural roadways, on school grounds and in urban neighborhoods, from wild protected areas to urban parks. Connecting with nature helps to bring us all peace and good health, and provides the foundation for resilient, healthy ecosystems, communities, and economies to thrive and remain for generations and generations to come.

Welcome and Background

Dear Colleagues,

For humans to thrive in harmony with nature, we need to understand the importance of integrating it into our lives. However, while many of us experience, benefit from, and care for nature, others face barriers to experiencing and connecting with it. In an effort to make nature a part of the lives of all people from all walks of life and, in doing so, create increased support and action for conservation globally, the IUCN World Commission on Protected Areas (WCPA) and IUCN Commission on Education and Communication (CEC) jointly launched #NatureForAll in 2016.

#NatureForAll is a global movement to inspire love of nature with, as of October 2018, nearly 30 partner organizations from more than 60 countries.

#NatureForAll partners are showing how personal experiences and connections with nature provide powerful benefits for individual and societal health, well-being, and resilience, and are the foundation of a lifelong support for nature conservation. They are coming together as a coalition to share actions, collaborate, and amplify their collective reach to engage new audiences to connect with, and fall in love with, nature—and ignite action. As an important part of their work, they are accessing and generating knowledge about the value of experiences in nature and its links to positive attitudes and behaviours toward the Earth. This knowledge has a vital role to play in informing local, regional, and global policy and action on conservation and related issues.

The evidence supporting the link between human relationships with the rest of nature and actions that support positive conservation behaviour is rapidly growing. That knowledge base, with its specific focus on what leads to care for the Earth, is synthesized in this document. The health, education, economic, social and cultural benefits for humans through their connections with nature are increasingly understood. What is equally of interest are opportunities to foster connections with nature in ways that not only serve people, but, reciprocally and interactively, foster actions to care for the living systems and non-human inhabitants of our planet. *Home to Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth* provides the evidence for an urgently needed guide to action.

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Introduction

"The care of rivers is not a question of rivers, but of the human heart."

Tanaka Shozo, Japanese conservationist, 19th Century

Home to Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth presents the growing body of evidence that people's relationship with nature profoundly influences their behaviours toward the Earth.

This report was born from the questions, "What leads people to take action to care for the environment, the Earth that supports us all? What does the evidence say—from Indigenous and local wisdom to peer-reviewed scholarly studies?"

The results are compelling. For many people, caring for nature is a result of connecting with it. This can happen in a combination of ways—emotionally, physically, intellectually, sometimes spiritually and most often, through direct experience.

This report was initiated as a part of the International Union for the Conservation of Nature's #NatureForAll initiative. Its overall purpose is to advance #NatureForAll and inform policy development for biodiversity conservation and other sectors by synthesizing and making available the evidence that links experiences in nature with positive conservation attitudes and behaviours and the nurturing of sustainable development. It includes academic research and anecdotal information, as well as Indigenous and local knowledge. Not designed or intended to be a formal literature review, it is a compilation and synthesis of evidence to assist in advocating for the importance of connecting people with nature. Summarizing the evidence that links human-nature connectedness with conservation and sustainable development outcomes was a key focus. Where relevant, evidence related to health, education, and other benefits of connectedness with nature was referenced. This work was not intended to duplicate other syntheses, especially those related to health and education outcomes.

The Children & Nature Network (C&NN), a core #NatureForAll partner, focuses on connecting children, their families and communities with nature. C&NN's vision is a world in which all children play, learn and grow with nature in their everyday lives. Its mission is to lead a global movement to increase equitable access to nature so that children–and natural places–can thrive. C&NN fulfills this mission by investing in leadership and communities through sharing evidence-based resources, scaling innovative solutions, and driving policy change. Among other things, it curates and houses the most extensive collection of peer-reviewed research studies currently available for connecting children, families and communities with nature.

The resulting report was developed by a team of 14 authors coordinated by the Children & Nature Network, supported by an international oversight team, and reviewed by more than 60 individuals and representatives of organisations from 22 nations and five continents. In addition to the full report, which follows in this publication, a shorter summary titled *Connecting with Nature to Care for Ourselves and the Earth: Recommendations for Decision Makers* and additional resources are also available at www.childrenandnature.org and http://natureforall.global.

The report begins with a broad perspective about the importance of people's and the Earth's overall health and well-being, at a time when there are great risks to both. Most of the document is designed to identify and describe the major evidence-based sources of knowledge that can help inform policy and practice for people of varying ages and in varied settings. The report does not represent a systematic review of academic research and it does not take a hypothesis-testing approach. Rather, it brings together key findings from a range of sources to create a synthesis of the state of knowledge relevant to understanding whether and how our relationship with nature influences our tendency to care for the Earth.

A summary chart of Guiding Principles conveys the major findings from this synthesis of evidence. Based on this analysis and other findings, guidelines and recommendations for policy and practice are offered. The appendices include brief descriptions of policies, projects, programs, and other resources to serve as examples of actions being taken throughout the world to foster the kind of connectedness with nature that the evidence indicates will be most likely to achieve a worldwide culture of conservation.

Home to Us All is intended to be comprehensive in addressing what is known about the link between nature-based experiences in life, and people's affinity for and tendency to take action to benefit nature. Most of the evidence to date is correlational, not causal. While the patterns tend to be clear, and the overall findings as reported here are substantiated, additional research is needed to provide more detailed guidance and direction.

The report supports the understanding that direct, mostly positive, and meaningful experiences with nature contribute to people taking action to benefit the Earth locally, and also more broadly. For older youth and adults, exceptions to the concept of positive experiences are where adventure and risk, which may also be challenging and perhaps frightening, correspondingly lead to a commitment to care for the Earth.

Most important, the report makes it clear that conservation actions are developed through connectedness with nature. However, throughout the report, related terminology can be confusing. The reader will find references to positive conservation behaviours and actions, ecologically responsible behaviour, care for the Earth, pro-environment behaviours and similar terms. All are intended to describe people's actions when they engage deeply and constructively with the rest of nature.

Through the review process, there have been concerns that the report focuses largely on research from developed nations, perhaps reflecting a Westernized bias. That is correct to some extent. Nearly all of the peer-reviewed literature is based on research from what may be called Westernized nations, where a commitment to economic development, industrialisation, and urbanisation tends to dominate. However, there are more voices included. There is research and wisdom from developing nations, Indigenous knowledge systems and local communities. In a world where more than half the people live in urban settings, and the trend to urbanisation continues, the results have implications for people and ecosystems on all continents. At the same time, the voices of those outside of urban settings are heard and reported.

The first three sections of the report open with Summary Statements identifying the major ideas that will be addressed. The text that follows provides citations in support of each of the statements, as well as additional information. The citations include literature reviews, reports of primary research, articles, chapters in books and other sources. "What Can We Do?" and the concluding "A Call for Inspired Action" are then based on what was learned and reported in the previous sections.

The authors and supporting organisations encourage all readers to share this report's recommendations with others and help to implement them. On behalf of all of those who helped to fulfill the purpose of this project, we also want to hear from you: suggestions for improvements, examples of how you have used parts of the publication, progress updates from your own communities, innovative and effective practices you have implemented, as well as what you are learning, challenges you are experiencing, and stories you can share—all are welcomed.

With appreciation,

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What’s the Problem? Why Care?

This is a story. It is a story about the relationship between people and the living Earth. It is the most urgent, compelling, and inspiring story to be shared today. It is a story that will define the kind of planet that future generations will inherit and inhabit.

To help us tell the story, we must remember, learn and act upon the wisdom of our elders and knowledge holders. Some of those knowledge holders are alive today; others lived long ago. Some draw from the spirit world. Some from religions. Some from the sciences and the arts. Some from long-standing cultural traditions. Some from literally listening to the Earth, its non-living elements, and all its species.

Some will say this is a prayer. Some will say it is a calling. Some will say that they are standing on scientific evidence. All these knowledge holders share the view that it is a privilege and a responsibility to be a member of the Earth family.

Why is it so important today, and for the future, to hear this story and share it with others?

Life conditions on Earth are changing more rapidly than ever before in recorded history, and not in a positive way. Our planet is experiencing a mass extinction that will have cascading consequences for ecosystems and human civilization (Ceballos et al., 2017). Species and habitats are being transformed. They are disappearing at a rate never before seen as the result of increasing pressure from resource consumption, over population, over exploitation, habitat loss, spread of invasive species, pollution and climate change (Steffen et al., 2015). We need to act rapidly, and with urgency, to reverse our present course.

Many human beings are living with little direct, intentional and conscious experience of the beauty and complexity of the Earth's living systems. The realization that humans are just one part of this interdependent and interconnected web of life has been forgotten or lost in the memories of many. While this disconnect can occur even in rural and undeveloped areas, it tends to be exacerbated for people living in cities and heavily urbanized areas. Significantly, 55% of the world's population currently reside in urban areas and by 2050, 68% of the world's population is projected to be urban (UN World Urbanisation Prospects, 2017). In Europe, North America and East Asia, urbanisation rates typically exceed 75%. If we include Latin America in the list of highly urbanised areas, the rate exceeds 80%. Urban areas are significant drivers of resource use and environmental change globally. This is not to say that urban areas cannot be biologically diverse; they can, and are, with care and effort. In fact, urban areas hold great potential for connecting people of all ages with nature in their everyday lives. This story explains why and how doing so will be good for people, and for the planet.

To ensure human existence on Earth well into the future, it is necessary that we maintain and enhance the vitality, vigor and resilience of the Earth's systems. These systems literally produce the basic essentials for all life, giving humans the air we breathe, the food we eat, the water we drink, the space in which we live and the shelter we seek. So too does the Earth provide for wildlife, domesticated animals, and all other life forms. Earth is home to us all. We need to act, now.

Even for those who feel some sense of connection with the living systems that support us all, that connection does not always translate into a personal commitment to action. There may be a vague sense that the connection is being eroded, with a disquieting feeling of loss and powerlessness. It is difficult to inspire widespread action through information and awareness campaigns alone. To get to action, the heart and hands are typically engaged as well.

While there are some examples of success in stimulating action by raising concern and awareness of environmental problems, for the most part, such awareness has not led to the sweeping policy actions that are sufficient to tackle the issues effectively.

While it may seem obvious that human health and well-being are inextricably linked with the Earth's living systems, it is accurate to say that, as a species, we are not living as if we recognised our interconnectedness. In contrast, we are continuing to engage—directly or indirectly—in practices that have put the Earth's life support systems at profound risk. As a result, human health and well-being are being demonstrably eroded (World Health Organisation, 2017), and the existence of other species and the habitats they rely on is being severely and negatively impacted (Butchart et al., 2010; IUCN, 2013).

The underlying essence of this story is that there are systemic crises of health and well-being affecting people, wildlife, and ecosystems throughout the world. And yet, within the story, there is hope. We humans are capable of achieving a new and healthy relationship with nature that embodies a regenerative and life-nurturing way of being on Earth. The opportunity exists. We have more than enough evidence of the need to act now. Ours must be a story—a legacy—of love, not loss, for ourselves and for the Earth that is home to us all (Charles, 2015; IUCN, 2011).

What's the Problem? Why Care? Summary Statements

- Life conditions on Earth are changing more rapidly than ever before in recorded history.
- Better understanding the critical connection between people and nature is key to informing effective decision making, stimulating positive action, and optimizing the benefits people and communities receive from nature.
- Many human beings are living with little direct experience of the Earth's living systems.
- Meaningful, positive experience in nature is a powerful way of developing a connection with, or love of, nature that can in turn guide people toward care for the Earth.
- People need healthy ecological and social environments for their own health and well-being.
- Establishing and maintaining healthy relationships between humans and the Earth's living systems is a critical foundation for strong public support and cross-sectoral action to achieve biodiversity conservation and sustainable development.
- Knowledge is very important but is not enough on its own to cause people to take action to benefit nature.

Why? It's Time to Heal

At a time when the world is confronted with growing environmental threats, better understanding the critical connection between people and nature is key to informing effective decision making, stimulating positive action, and optimizing the benefits people and communities receive from nature.

Spending time in nature is good for us—for our children's development, our overall health and well-being, the vitality of our communities, and our economies. When people experience and connect with nature they are also more likely to act in ways that benefit the Earth. However, many of us are losing or missing the benefits of direct connections with nature. We need to put effective policies and practices in place in order to help people of all ages and walks of life overcome barriers to connecting with nature.

Below, we provide a brief overview, derived from readily-available published studies, of some of the important benefits of nature-based experiences for people of all ages. This is followed, both in this section, and in the main body of this report, by an expanded discussion of the relationship between experiences in nature and the development of the sense of connectedness that tends to lead people to take action to care for nature.

At a personal and societal level the evidence is strong and growing that people tend to be happier, healthier, and more productive, creative, active and engaged in community and civic life when nature is a meaningful part of their lives (Richardson et al., 2017; Chawla & Litt, 2013; Louv, 2012; Charles & Wheeler, 2012; Charles & Senauer, 2010; Kuo, 2010; Louv, 2008). The many benefits of connecting with nature start with our children (Charles & Louv, in press). For example, infants and toddlers develop healthy resilient bodies from time spent exploring hands-on and whole body with natural materials; they are stimulated cognitively and physically by the sights and sounds in outdoor spaces. They develop social skills and bond with family members through shared experiences in the outdoors (D'Amore, Charles & Louv, 2015; St. Antoine, Charles & Louv, 2012). From birth to five years of age, children undergo exceptional rates of brain development, which can be stimulated and supported through nature-based experiences.

School-aged children can build on this foundation through active, outdoor play which has been linked to the development of core skills, including problem-solving and reasoning, creativity, curiosity, risk-identification, resilience, self-regulation and social and emotional learning (Greffrath et al., 2011; Strong et al., 2005; Bingley & Milligan, 2004; Korpela et al., 2002). For students, research studies are showing positive associations between the greenness of school landscapes and academic performance, such as standardised test scores and rates of graduation (Li & Sullivan, 2016; Wu et al., 2014; Matsuoka, 2010). In response to a recent survey conducted in 45 countries for the Outdoor Classroom Day initiative, teachers reported that when lessons are taken outdoors, children are more engaged in learning (88%), are better able to concentrate (68%), and are better behaved (65%) (Project Dirt, 2018).

Children and adolescents with access to nature also tend to enjoy more physical activity (Barton et al., 2014). They benefit from reduced rates of obesity and other chronic diseases, including diabetes and heart disease, as well as enhanced emotional well-being and resilience (Chawla, 2015; Chawla et al., 2014; McCurdy et al., 2010; World Health Organisation, 2004). Research indicates that exposure to nature can act as a protective factor for the mental health of young people (Piccininni et al., 2018; McCurdy et al., 2010; Louv, 2005). A recent study of 29,784 Canadian adolescents found that engagement in outdoor play—even as little as a half hour per week—was associated with decreased prevalence levels of psychological symptoms in females, and decreased psychosomatic symptoms in both males and females (Piccininni et al., 2018). Teens also benefit from peer support and grow in self-esteem while working, learning, and exploring in groups—particularly enriched by service-oriented projects in the outdoors—that develop their confidence and capacity to care for themselves, others and the environment (Becker et al., 2017; D'Amore, Charles & Louv, 2015).

Time spent in nature has an important protective role to play in health and well-being at all ages. Following walks in nature or having viewed natural elements, individuals have recorded improved blood pressure, pulse rates and stress hormone levels (Gladwell et al., 2013; Tsunetsugu et al., 2010; Pretty et al., 2005; Kaplan & Kaplan, 1989). In one study, gardens were shown to help Alzheimer's patients in long-term care facilities remain calm, helping to reduce incidents of aggressive behaviours and the related risk and stress for patients and their health care providers (Mooney & Nicell, 1992). In another garden-based study, it was found that residents in geriatric care who sat in a garden for one hour each day significantly improved on all measures of concentration compared to those that stayed in their room (Ottosson & Grahn, 2005). In our workplaces, as little as looking at nature through a window can decrease stress and improve work performance (Kaplan & Kaplan, 1989).

Evidence is also mounting that proximity to nature may be one of the best predictors of people's physical activity and associated well-being benefits. Adults are demonstrating that exercise outdoors in nature not only builds physical strength and agility, but also enhances their sense of well-being (Chawla & Litt, 2013; Louv, 2012; Kuo, 2010). Simply walking outdoors has been shown to mitigate the severity of depression for individuals, while outdoor activities such as gardening and cycling have also been linked to reduced levels of anxiety and depression (Peacock et al., 2007; Pretty et al., 2005). Exposure to various forms of nature can lead some people to be more generous and caring, helping to bring individuals closer to others (Weinstein et al., 2009). At a community level, neighbourhoods with more green space report higher levels of resident happiness (Bell et al., 2008).

Connecting with nature is a potential public health strategy that is accessible and affordable for many populations, with research demonstrating not only protective values but restorative benefits as well. Positive impacts of nature exposure for adults can include fewer medications, faster recovery from surgery and shorter hospital stays (Maller et al., 2005; Ulrich 1984).

Research studies similarly indicate that time in nature can reduce the need for medication and services among mental health patients (Faculty of Public Health, 2010). In addition, the rising costs of medication for some conditions such as Attention Disorder Hyperactivity Syndrome (ADHD) may be mitigated when time is nature is considered as part of a treatment plan (Faber-Taylor & Kuo, 2009; Faber-Taylor et al., 2001; Faculty of Public Health, 2010). Investment in nature to promote health and well-being can also return economic benefits. According to one study on the cost-benefit analysis of physical activity using bike and pedestrian trails, every $1 investment in trails for physical activity led to $2.94 in direct medical benefit (Wang et al., 2005). Families, taxpayers, employers and governments all bear the growing economic and social burden of physical and mental illnesses worldwide. As a starting point, access to nature in different shapes and forms is critical for helping people reap the many physical and mental benefits of nature connection.

In a rapidly urbanising world, community green and blue spaces and nearby nature not only support a range of health benefits, but can also foster social cohesion. Exposure to various forms of nature has been shown to lead some people to be more generous and caring, helping to bring individuals closer to others (Weinstein et al., 2009). Nearby nature, such as urban parks, provides the setting for communal activities and contact with neighbours, and can result in a greater sense of belonging to community and increased resident satisfaction. Studies have demonstrated that urban residents living near natural areas tend to know and respect more of their neighbours, and also report higher levels of mutual trust and willingness to help one another, compared to their counterparts living in more barren surroundings (Kuo, 2010; Korpela et al., 2002; Kuo & Sullivan, 2001; Kuo et al., 1998). Researchers have found that nearby nature helps prevent crime and mitigates some of the psychological precursors to aggression and violence. A study of 145 public housing residents, for example, showed that those living in buildings with views of concrete and asphalt reported more aggression and violence than did their counterparts living in identical buildings with views of trees and grass (Kuo, 2010; Kuo & Sullivan, 2001). Similarly, evidence suggests that greening remediation programmes of urban vacant lots can reduce vandalism as well as gun assaults and violent crimes, including aggravated assaults and homicides (Kondo et al., 2016). Urban areas with accessible and quality green and blue spaces also benefit from economic spin-offs. Attractive green spaces can influence business location decisions, helping to bring new jobs to a community. Studies in Canada and the United States have shown that closeness to natural features is associated with higher residential and commercial rents, and premiums on property taxes (Parks Canada, 2014; Sherer, 2006). In New York City, for instance, the revitalization of Bryant Park replaced a barren landscape associated with drug deals and robberies with an appealing space that now attracts thousands of visitors daily. In the two years following the park reopening, leasing activity on neighbouring Sixth Avenue increased 60%, prompting brokers to term the revitalised park their "deal-clincher" (Sherer, 2006). Similarly, in the city of Berlin, it was found that proximity to playgrounds increased property values by 16%, while a high number of street trees resulted in a 17% increase (Luther & Gruehn, 2001).

The economic impacts of nature in the city extend beyond beautifying the scenery. Grass, trees, parks and other natural areas in cities absorb rainwater, remove pollutants from the air, buffer noise pollution, lower air temperature, and reduce urban heat islands; they provide watershed protection, flood protection, support biodiversity, and help to mitigate the effects of climate change (Hartig et al., 2014; Alberta Recreation and Parks Association, 2010). In addition to human comfort, natural areas, or "green infrastructure," can perform many of the same services as gray infrastructure, often at a reduced cost and more reliably, and can offer other economic-spinoff benefits, such as extending the life of asphalt in roadways (Alberta Recreation and Parks Association, 2010).

With the growth of sustainable nature-based tourism, the economic benefits associated with the natural environment can extend to both urban and rural areas. Representing 10% of world GDP and 1 in 10 jobs globally, tourism has a decisive role to play in job and wealth creation, environmental protection and poverty alleviation (World Tourism Organisation, 2017). Nature-based tourism alone creates a diversity of jobs for a range of sectors and contributes to the health of local, regional, and national economies. For example, the niche adventure tourism market, valued at $263 billion, is one of the fastest growing categories of tourism globally. In Europe, North America, and South America, the adventure travel market had an estimated average yearly growth of 65% from 2009-2012 (Center for Responsible Travel, 2016). In Sub-Saharan Africa, the promotion of beaches, plentiful wildlife, extensive natural and cultural attractions, and adventure opportunities helped increase tourism numbers from a small base of just 6.7 million visitors in 1990 to 33.8 million visitors by 2012 (Christie et al., 2014). In Canada, it has been shown that visitors to parks directly support more than 64,000 full-time jobs, generate $2.9 billion in labour income, and provide $337 million in tax revenue for governments (Parks Canada, 2014). Interestingly, in Columbia, South America, the positive evolution of security and the exploitation of ecotourism has helped the tourism sector grow at a faster rate than the national economy (World Tourism Organisation, 2017).

In the United States alone, the outdoor recreation economy accounted for 2.0 percent ($373.7 billion) of GDP in 2016. In addition, the outdoor recreation economy grew 3.8 percent in that same year, compared to growth of 2.8 percent in the overall economy. These numbers are particularly impressive in that they are larger and more sustainable than the contributions of industries such as mining, oil, and gas extraction (1.4% of GDP) (Bureau of Economic Analysis, 2018). At a global level, it has become evident that tourism, and related sectors such as the outdoor adventure industry and outdoor recreation, are drivers of economic growth. The economic potential of these industries, however, can only be fully realised and sustained if the natural assets on which they are based are protected from degradation. In this way, a responsibly-managed nature-based tourism sector could be a global leader and driver of sustainable development, with the potential to positively change the world.

There are inherent risks to be managed as over-use of protected areas, badly planned developments, and disregard for local culture and initiatives can all undermine many of the potential advantages (Dudley et al., 2017). As a first principle, human interactions with natural areas for economic purposes must be responsibly, thoughtfully, and sustainably managed.

Finally, a growing body of evidence, which is the subject of this report, reminds us our relationship with nature profoundly influences our behaviours towards the Earth. Lack of personal experiences with nature, as well as lack of understanding of Indigenous peoples' knowledge systems and relationships with nature, limit our understanding of environmental challenges and appropriate actions to address those challenges (Cajete & Williams, 2018; Gratani, et al., 2016; Cajete, 2015). Experiencing and learning from nature teaches us about ourselves, our mental habits and attitudes, our values and beliefs as well as about the environment. Therefore, just as scientific knowledge is a key driver in addressing public policy and environment and sustainable development-related issues, this research demonstrates the importance of considering and integrating the role of personal connections with nature in the process. The evidence suggests that experiencing meaningful personal connections with nature is as important as scientific knowledge in addressing nature conservation issues (Bamberg & Moser, 2006; Klockner, 2013). Knowledge is very important but is not enough on its own to cause people to take action to benefit nature (Klockner, 2013; Bamberg & Moser, 2006; Monroe, 2003; Stern, 2000; Hungerford & Volk, 1990; Azjen & Fishbein, 1980; Schwartz, 1977).

So why care? Because healthy nature has economic benefits. Because healthy and accessible natural environments support healthy people. Because healthy people reduce social costs. Achieving these benefits requires that we have access to nature. And having access to nature depends on enough of us caring enough to make sure that there are places and spaces where people can experience nature daily or often, and through all stages of their lives.

The transformative power to heal and move forward in good health is within our shared reach. The power lies within our direct relationship with nature itself. We are capable of reversing the trends of the immediate past and present in order to achieve a new and positive relationship with nature, a relationship that embodies an inherently regenerative and life-nurturing way of being on Earth. This regenerative relationship, combined with informed and responsible action, will achieve a healing time on Earth. In the process, we may heal ourselves.

What Do We Know?
What Does the Evidence Tell Us?

The Story of the Lost Girl

Many Indigenous peoples understand that humans are not separate from the rest of nature. All are one. When humans think about how to care for the Earth, we must begin with the recognition that we ARE nature, we are of the Earth, all beings are connected and we are one. The symbiotic relationship with country is told in many stories, one of which is the story of the lost girl:

The girl had lost her way. She had wandered far from the Mothers, the Aunties and the Grandmothers, from the Fathers and the Uncles and the Grandfathers. She had hidden in the shadow of a rock, and fallen asleep while she waited for her brothers and sisters to find her. Now it was night, and no one answered when she called, and she could not find her way back to camp.

The girl wandered, alone. She grew thirsty, so she stopped by a waterhole to drink, and then hungry, so she picked some berries from a bush. Then the night grew colder, so she huddled beneath an overhanging rock, pressing herself into a hollow that had trapped the warm air of the day. Finally she saw a crow flying in the moonlight, flapping from tree to tree and calling 'Kaw! Kaw! Kaw!' The girl followed the crow. She followed him through the trees and over the rocks and up the hills, until at last she saw the glow of her people's campfires in the distance.

The people laughed and cried at once to see that the girl was safe. They growled at her for her foolishness, and cuddled her, and gave her a place by the fire. Her little brother asked her if she had been afraid; but the girl said – "How could I be frightened? I was with my Mother. When I was thirsty, she gave me water; when I was hungry, she fed me; when I was cold, she warmed me. And when I was lost, she showed me the way home."

Kwaymullina (2005)

Indigenous Perspectives and Indigenous Knowledge Systems

Traditional Ecological Knowledge (TEK) is being incorporated formally into scientific research projects, especially where historic and in-depth knowledge is needed to understand how best to adapt to climate change (Robbins, 2018).

Indigenous peoples throughout the world are among those most passionately and courageously working to give voice to our interconnectedness with all other beings and humans' associated responsibilities. The convictions and actions of many of these courageous leaders put them in constant danger from those who would challenge their voices. Yet, they carry on. We honor their sacrifices and learn from their legacy.

What Do We Know? What Does the Evidence Tell Us? Summary Statements

Humans are not separate from the rest of nature.

Many Indigenous cultures, including both ancient and contemporary traditions, offer the perspective of humanity's oneness with all that is.

This sense of oneness with the natural world, which is characteristic of much spiritual experience, is consistent with the understanding of life in contemporary science.

Exposure to nature promotes human health throughout our lives, and strengthens our physical, mental and social well-being.

Meaningful, positive experiences in nature can help create connectedness, an emotional affinity or love of nature.

There are many ways to connect with, value, and take action to benefit the Earth and its living systems.

Awareness, knowledge and pro-environment attitudes tend not to be enough to inspire and cause action to occur.

Connectedness to nature is a strong predictor of positive conservation behaviour.

Positive, direct experiences in nature during childhood and role models of care for nature by someone close to the child are the two factors that contribute most to individuals choosing to take action as adults to benefit the environment.

Connectedness to nature is facilitated by meaningful experiences in nature and mentoring.

A meaningful connection to nature can be facilitated and enhanced throughout our lives, may start at any time, and occur in a variety of settings, including within wild, rural, and urban environments.

There are adult pathways to conservation behaviour.

Experiences to foster environmental commitment and action tend to be most successful when they occur over an extended period of time, include opportunities to acquire and practice action skills, and result in some tangible success in accomplishing at least some of the intended goals.

Indigenous Wisdom: We Are One

What we know begins with ancient and Indigenous wisdom, wisdom which is based on natural law, the workings of the land and relationships. In the South Pacific, New Zealand's Maori people have traditionally held a deep connection to the environment, focused on their tribal lands and waters in particular. The Maori world view positions Maori as both part of the natural system and guardians for that system (Cowie et al., 2016; Panelli & Tipa, 2007). In Australia, Aboriginal culture was founded on the belief that people and nature are created as one, and humans do not have dominion over the natural world. Tribes had their own wisdom to connect them to the land or "country" (Gammage, 2011; Hall & Hendricks, 2012). For Aboriginal peoples, the concept of "country" embodies resilience. It is the holistic engagement of a person with a specific physical location that is both symbolic and real.

In North and South America, Indigenous people have many ways of remembering and practicing Earth-based wisdom. For example, for the Makunas, Eastern Tukanoan groups from the Northwest Amazon, humans and non-human beings share many of the same places. There is no separation between beings. There is no separation between the visible and invisible, or between culture and nature, making evident the complete interdependence of all living beings (Cayón, 2008).

The medicine wheel, or circle of life, is a powerful teaching tool (Lane, Jr., et al., 1984). One aspect of the medicine wheel, in connection with the tree of life, is that it "reflects the four great developmental stages that give meaning and foundation to each human being through life: protection, nourishment, growth and wholeness" (Cajete, 2015, p.11).

Dr. Gregory Cajete, Native American educator and Tewa Indian, offers this explanation:

> Through an understanding of "protection" (the shade of the tree), we come to see how the earth itself and other life provide for our human lives and well-being. In understanding the nature of "nourishment" (the fruit of the tree), we see what we need to grow, to live a good life. We come to understand how we are nourished through the relationships we have at all levels of our nature and from all the other sources that share their "life" with us. We also come to know that, as we are nourished, we nourish others in turn.
>
> As a tree grows through different stages . . . . . we come to understand that growth and change are key dynamics of life . . . . . And then there is wholeness . . . . . It means finding our place as part of a greater life process, one that is rooted to a past, present, and future ecology of mind and spirit (Cajete, 2015, p.11).

Ancient Traditions: We Are One

Other traditions, similarly spanning millennia, also offer the perspective of humanity's oneness with all that is. Among those are contemplative and meditative practices, including those from Buddhist and Taoist traditions. An ancient approach to oneness with all Life is known in India as Sanatan Dharma. Here we are not referring to what some describe as the foundation for Hinduism. Instead, we are drawing from the understanding of Sanatan Dharma that describes it as "the eternal religion" and thinks of it as the tree of life for all the world religions in the sense that it is universal, inclusive and transcendent. According to Paramhansa Yogananda, as told by Swami Kriyananda, "Sanatan Dharma, rightly understood, is rooted in the foundations of the universe . . . (T)he goal of Sanatan Dharma is twofold: the upliftment of human consciousness, on the one hand, and the expansion of our self-identity through love, on the other, that we embrace all life and all reality as our own (Kriyananda, 1998)."

As naturalist and educator, Joseph Cornell, explains, "The Bible says, 'Be still and know….' The Chinese philosopher Lao Tzu agrees, 'To the mind that is still, the whole universe surrenders.' Calm feeling is intuition, which is like a lake without ripples, reflecting life clearly and completely. The soul uniting with God, or larger Reality, lies at the core of all religious revelation. Spiritual nature experiences have the following traits in common: overwhelming peace, oneness, and intense beauty. The more alive we feel, the more nature becomes alive and sacred. Feeling is the aspect of human consciousness that has to do with intention. Absorbing, serene nature experiences calm and uplift the feelings in the heart, creating a firm foundation for a person to truly care for the earth (Cornell, 2018)."

Contemporary Science: We Are One

Contemporary science increasingly supports the view that spiritual traditions and scientific evidence are congruent and complementary. Spirituality relates to our inner experiences and beliefs that give meaning to existence and go beyond the current context. Kamitsis and Francis (2013) looked at the role of spirituality in the link between connection to nature and well-being. They found that being connected with nature, and having a sense of connection to nature, was linked to both greater spirituality and mental well-being, with spirituality being a possible source of the increased well-being. As Fritjof Capra says in his 2009 introduction to his classic, *The Tao of Physics*, originally published in 1975:

> (T)he experience of being connected with all of nature, of belonging to the universe, is the very essence of spirituality . . . Spiritual experience is an expression of aliveness of mind and body as a unity. Moreover, this experience of unity transcends not only the separation of mind and body, but also the separation of self and world. The central awareness in these spiritual moments is a profound sense of oneness with all, a sense of belonging to the universe as a whole. This sense of oneness with the natural world, which is characteristic of spiritual experience, is fully borne out by the understanding of life in contemporary science.

Exposure to Nature Contributes to Care for Ourselves and Others

Being exposed to nature has profound health benefits, including increased physical activity, reduced symptoms of mental health disorders, increased relaxation and an enhanced overall sense of well-being (Chawla & Litt, 2013; Kuo, 2010). There is evidence that experiences in nature promote positive social behaviour, including kindness, altruism, generosity and resource-sharing (Weinstein et al., 2009). Simply viewing beautiful nature scenes can result in people being demonstrably more cooperative and generous to others, even in the presence of strangers. Among the benefits, a growing body of evidence on the science of awe—experiencing a profound response to what is perceived as the wonder of nature—can inspire people to solve problems more cooperatively and creatively (Stellar et al., 2017; Piff et al., 2015).

Bonding with Nature Contributes to Care for the Earth

What is referred to as nature connectedness is a relatively new field of study. Increasing evidence indicates that experience with nature can create a connectedness—that is, an emotional affinity or love of nature, oneness with all that is. Such connectedness can occur in a variety of settings. In fact, connectedness with nature is emerging as a strong predictor of positive conservation behaviours (Mayer & Frantz, 2004; Geng et al., 2015; Braun & Dierkes, 2017; Otto & Pensini, 2017; Beery & Jorgensen, 2018). Such a bond contributes to a person's identity as well as their tendencies to care about, conserve and protect nature (Kals, Schumacher & Montada, 1999; Schultz, 2002; Hinds & Sparks, 2009; Goralnik & Nelson, 2011; Beery, 2013).

An emotional bond with nature influences people's thoughts, attitudes and behaviours. Along with one's personal sense of identity, a strong emotional bond can affect whether or not a person chooses to be physically close to nature. This bond can inspire a feeling of safety when close to nature or distress when separated from it. It can spark a willingness to invest financial or mental resources in nature or, importantly, to protect it from harm (Green, 2018; Park & MacInnis, 2006).

While much remains to be understood about what factors contribute to human actions that benefit the Earth, scholars continue to offer deeper insight into this area of study. One thing is clear, as Ardoin and colleagues observe, "One model could never explain all environmental behaviours for any person in every context" (Ardoin et al., 2013, p.16). This theme—that there are many ways to connect with, value, and take action to benefit the Earth and its living systems—runs throughout the conservation-related literature.

Some of the earliest academic work to discern patterns and relationships within human behaviour related to actions to benefit nature was conducted initially in the 1970s and 1980s (Hungerford & Volk, 1990). With time, meta-analyses have resulted in an affirmation of what is currently a generally agreed-upon view: While awareness remains important, knowledge alone tends not to be enough to cause people to take action to benefit the environment (Bamberg & Moser, 2006; Klockner, 2013).

Several models now suggest that general attitudes do not always directly influence behaviour (Schwartz, 1977; Azjen & Fishbein, 1980; Stern, 2000; Monroe, 2003). Conservation and pro-environment attitudes may also be insufficient to inspire and cause action. More than a positive attitude tends to be needed.

Meaningful Childhood Experiences in Nature Are Connected to Adult Conservation Behaviours

Formal studies of the relationships between nature-based experiences and a conservation ethic is a relatively recent phenomenon. Tanner (1980) notably explored this connection, finding that most people who chose a life in which they demonstrated commitment to the environment reported significant experiences with nature in their childhood. For most of these individuals, the natural habitats were accessible for unstructured play and discovery nearly every day when they were children. In the years since, the number of studies, and systematic analyses that review the strength of the collective evidence from those studies, has been increasing.

In 2006, researchers Wells and Lekies went beyond studying the childhood influences of environmentalists; they looked at a broad sample of urban adults, ages 18 to 90. Their study indicated that the most direct route to adult concern and behaviour related to the environment is participating in such "wild nature activities" as playing independently in the woods, hiking, and fishing during childhood. While other nature-based activities can also have an instrumental influence, those activities that required independent behaviour and some autonomy were more influential than structured and guided activities (Wells & Lekies, 2006).

This does not mean that people cannot develop a commitment to care for the Earth as adults. Nor does the natural environment need to be pristine and rural; places of nature within urban and other populated settings are effective too (Kellert et al., 2017). It does mean that nature-based experiences in childhood increase the odds that more people will care and take action throughout their lives. Louise Chawla, for decades, has brought voice to the factors that most tend to contribute to a lifelong passion to care for the Earth (Chawla, 1998). Chawla and Derr make this statement:

> Existing research suggests that if societies seek to achieve a sustainable world where not only will people act to protect the biosphere today but also future generations will value this goal and work for its achievement, then children need to be provided with regular access to nature. Research has linked a background of childhood play in nature with every form of care for the environment (Chawla and Derr, 2012, in Clayton, p. 548).

In addition to the importance of play in nature, there is an important role for human interactions. Chawla and Derr state:

> Research on formative experiences of environmentally active adolescents and adults repeatedly shows the role of parents and other family members who model care for nature and encourage their child's interests, as well as friends, teachers and mentors (Chawla and Derr, 2012, p. 549).

These two factors contribute most to children developing into adults who take action to benefit the environment: positive direct experiences in nature during childhood and role models of care for nature by someone close to the child—for example, a parent, grandparent, or other trusted guardian (Chawla, 1998; Chawla, 2006; Chawla, 2009; Chawla & Derr, 2012). As Chawla has found, most attribute their commitment to many hours spent outdoors in "keenly remembered" wild or semi-wild places, and a mentoring adult who taught respect for nature (Chawla, 2006). It is notable that these findings are now based on diverse samples of people from many parts of the world (Chawla & Cushing, 2007). A number of studies, from Germany to Taiwan, provide support for the important role of childhood recreation in nature, often with family members, as a predictor of behaviours to protect the environment (Hsu, 2017; Kals et al., 1999).

There Are Adult Pathways to Conservation Behaviours

While childhood time in nature is clearly instrumental in developing a lifelong commitment to care for the Earth, a positive and meaningful connection to nature can be facilitated and enhanced throughout our lives—and may start at any time. Opportunities to cultivate that sense of connection can be created, as well, in varied settings—including wild and rural areas as well as within the urban environments where more and more people live.

A large-scale campaign to engage people with nature is 30 Days Wild, conducted in the UK and sponsored by The Wildlife Trusts. Two elements are particularly notable: the number of people involved, and the duration of the nature-based experiences within the time frame of the study. Over the first three years, approximately 80,000 people signed up online to register to participate in nature-based activities for 30 consecutive days. Results reported in a study of some of those who participated indicated personal benefits including increases in reported health and well-being, along with positive conservation and environment-related behaviours (Richardson et al., 2016; Richardson & McEwan, 2018; Richardson et al., 2018).

Several studies have demonstrated a positive relationship between the level of involvement in nature-based activities as diverse as fishing (Oh & Ditton, 2008; Oh & Ditton, 2006), SCUBA diving (Thapa, Grefe & Meyer, 2006) and bird watching (Cheung, Lo & Fok, 2017; Hvenegaard, 2002; McFarlane & Boxall, 1996), and an individual's concern for the resources on which their activity depends. Others have found an association between people's sense of place and their conservation and pro-environment behaviours. Having a sense of place may include an attachment to a specific place as well as its personal meaning to them and to their identity. This suggests that people who develop a sense of place are more likely to want to protect it and to oppose the degradation of its environment (Tonge et al., 2015; Ramkissoon, Smith & Weiler, 2013; Halpenny, 2010; Stedman, 2002; Vaske & Kobrin, 2001). Some studies have suggested these links extend to more general care for the environment in everyday life (Halpenny, 2010; Vaske & Kobrin, 2001). For those who already have positive attitudes toward the environment, regular time in nature may play an affirming role by keeping nature "top of mind" and increasing the likelihood that they will take action to benefit the environment (Thapa, 2010; Tarrant & Green, 1999; Manfredo, Yuan & McGuire, 1992).

The Nature of Americans is a major study of nearly 12,000 American adults and children with the goal of better understanding and encouraging Americans' relationship with nature. Its final report was released in 2017 and is filled with valuable and useful insights and information. Among its recommendations is the importance of regular, even frequent, experiences outdoors in nature. The authors (Kellert et al., 2017) state, "Our research indicates that sporadic and occasional contact with the natural world is insufficient to instill in children and adults the curiosity, wonder and connection they require for nature to become a meaningful part of their lives." They encourage habitual experiences, making nature a part of people's daily lives. How can this vision be realized? Regular experiences in nature can be gained in a variety of ways. The image of a romantic adventure where solitude brings transformation is one path to nature's abundant gifts, but it is not the most frequent. As the authors state, "Nature experienced alone can be a powerful thing for many, but this is the exception, not the primary way adults and children experience nature (Kellert et al., 2017)."

Many people today, especially those with little or no connection to nature through direct experience, need and benefit from the company of family and friends to inspire joyful time in natural spaces. Such experience can be satisfied by places of nearby nature, which are the most accessible for most people. Research indicates that by simply noting "three good things in nature" each day for a week, people's connection to nature improves (Richardson et al., 2017). An analysis of these "good things" in nature indicates that people enjoy the sensations of nature, temporal change, active wildlife, beauty and colour. The results of this analysis may be used to provide direction and guidance for those seeking to connect people with nearby nature (Richardson et al., 2015). Community-based social marketing (McKenzie-Mohr, 2011), conservation psychology (Clayton & Saunders, 2012) and the Fogg Behaviour Model (www.behaviormodel.org) are rich sources of additional insights for application to the development of conservation and pro-environment behaviours.

A powerful and effective approach to engaging families and friends is occurring through the growth, internationally, of locally-driven, self-organizing, groups of people interested in getting children outdoors in nature on a regular basis. Encouraged by and called Nature Clubs for Families by the Children & Nature Network, they are taking form from Calgary to Bangalore, from China to Brazil. Frequently organized by a parent or group of parents, these clubs or groups typically meet on a weekly or monthly basis, with their children of all ages along with other family members and friends, to explore a nature-based setting for a few hours at a time (Children & Nature Network, 2014). Research conducted on some of these groups is finding enormous benefits to family bonding, enhanced confidence and creativity on the part of children, appreciation and respect for their children's interests and strengths on the part of parents, and the kind of connectedness to nature that research indicates is key to a lifelong commitment to care for the Earth (D'Amore & Chawla, in press; D'Amore & Chawla, 2017; D'Amore, 2015).

Nature Connectedness Is Vital to Conservation Action

A number of measures of nature connectedness have been developed in recent years and used to explore the relationship between connectedness and action to benefit the environment (Geng et al., 2015; Tam, 2013; Nisbet et al., 2009). Wright and Matthews (2015) state, "Nature connectedness refers to the degree to which individuals include nature as part of their identity through a sense of oneness between themselves and the natural world," and observe, "(T)here is evidence demonstrating that those who are more connected are more supportive of conservation, and that nature connectedness predicts environmental concern." Mayer & Frantz (2004) describe connectedness as a sense of "we-ness," which as a psychological process helps humans to feel empathy for nature, to care for nature, and to feel committed to its protection. Zylstra and colleagues (2014) define connectedness with nature as "a stable state of consciousness comprising symbiotic cognitive, affective and experiential traits that reflect, through consistent attitudes and behaviours, a sustained awareness of the interrelatedness between one's self and the rest of nature." They find hope within the construct, and view it as a "necessary prerequisite for realizing desired conservation and environmental behaviour outcomes." That view is supported by recent research that suggests environmental knowledge may explain only 2% of what is linked to ecological behaviour, while connectedness to nature explains 69% (Otto & Pensini, 2017).

Cheng and Monroe (2012) developed an index to investigate and assess children's connection to nature. They identified four major dimensions: enjoyment of nature, empathy for creatures, a sense of oneness, and a sense of responsibility. In the UK, the Royal Society for the Protection of Birds (RSPB) used the measure to show that four out of five UK children are not connected to nature (RSPB, 2013). In a survey of 775 children, the measure also showed that children who were more connected to nature had significantly better health, higher life satisfaction, pro-environmental behaviours and pro-nature behaviours (Richardson et al., 2016). Other factors influencing children's behaviours toward nature include their previous experience, their family values, and their perceived control or sense of efficacy. Connection to nature is the strongest predictor of students' interest in participating in nature-based activities. Connection to nature, family values toward nature, self-efficacy and previous experiences in nature all have direct influence on the interest students develop in environmentally-friendly practices.

Giusti and his colleagues conducted a study that provides additional insight into the characteristics of nature-based experiences that have a positive effect on the development of a child's connection to nature. The study reports that children's connections may be significantly nurtured by nature-based experiences with these qualities: entertainment, thought provocation, intimacy, awe, mindfulness, surprise, creative expression, physical activity, sensory engagement, involvement of mentors, involvement of animals, social or cultural endorsement, structure or rules, child-driven, challenging, and personally restorative (Giusti et al., 2018).

There is increasing recognition and a growing body of research that shows time spent in nature increases the likelihood of viewing one's self as a part of the natural world. Jordan and Kristjánsson (2017) argue that the underlying basis of our unsustainability is "a human-nature relationship and worldview, which fails to encompass interconnectedness and the interrelatedness of environmental and social issues;" and the importance of "a more holistic view of human flourishing as necessarily situated within nature." Nature connection experiences "need to engage participants in re-examining who we are, and how we are connected to everything around us…any change that is short of that scale will not solve the problems we face (Ehrenfeld and Hoffman, 2013, p.4)."

Many studies present the ethical significance of child's play in nature (Sandell & Öhman 2010; Postma & Smeyers, 2012; Bonnett, 2012). The evidence highlights the value of nature connection in developing a moral regard for self, others, and nature. Connecting to child-like play and joy in life is argued by Postma & Smeyers (2012) as more effective in motivating children to act, think and have moral regard than trading on fear. Nature connection can move us from a focus on objects to a focus on interactions and relationships, and shift our concentration from "preventing doom" to "anticipating care" (Postma & Smeyers, 2012, p.409). Related to this is Jon Young's and colleagues' 8 shields connection modeling, the 8Shields Village Builders and Regenerative Communities movements (www.8shields.org). The model explicitly recognises that deep and sustained nature connection can only happen with the container of culture and community. Nature connection nurtures people connection and vice versa. They are inseparable. The emerging field of nature-based leadership also draws on concepts from natural systems to inform and guide healthy relationships within one's self, with others, within communities and organisations, and in relationship to the Earth itself (Charles, 2018).

One recent approach to fostering connectedness to nature among adults, as well as children, is based on the typology of values associated with the biophilia hypothesis (Kellert & Wilson, 1993). The biophilia hypothesis describes the human need to affiliate with nature—that is, to connect with nature. The tendency to affiliate or connect can be weak or strong, and can be cultivated throughout a person's life. This relationship with nature and affiliation for life is often unconscious, manifesting in various ways which Kellert categorized into a typology of values of nature or nine biophilic values: Aesthetic, Dominionistic, Humanistic, Moralistic, Naturalistic, Negativistic, Scientific, Symbolic, Utilitarian (Kellert, 2002, p. 130; Burgess & Mayer-Smith, 2011). Having an understanding of these values provides practical and powerful ways to enhance connectedness. This approach allows for increased precision when designing and offering nature-based experiences by resonating with people's dominant values related to wildlife and the environment. Lumber, Richardson and Sheffield (2017) have tested experiences tied to the biophilic values to determine which are most effective in enhancing adults' connectedness to nature. While potentially relevant, the utilitarian and scientific biophilic values were not found by these researchers to be as powerful as the others. The researchers then re-named the values found to be most strongly associated with the development of connectedness to nature to optimize and operationalize their usefulness to researchers, practitioners, policymakers and the general public.

The biophilic values of naturalistic, humanistic, symbolic, moralistic and aesthetic were the most powerful, and translate into the values of contact, emotion, meaning, compassion and beauty (Lumber, Richardson & Sheffield, 2017). These are not necessarily mutually exclusive and tend to be interactive. These values now serve as a framework and set of criteria for designing and encouraging nature-based experiences to enhance connectedness with nature among people of all ages. For example, the framework has recently been adopted by the National Trust in the UK to help connect their 4 million members more closely with nature, and also informs their main nature engagement campaign for children.

Conservation and Pro-environment Behaviours

Nature connectedness is gaining coherence and momentum as being vital to conservation and pro-environment behaviour. Connectedness takes many forms. It can be stimulated, maintained and enhanced in various ways. However formed, it is a strong predictor of conservation actions among people of any age. It is so powerful that it can become a way of life, a lifestyle that benefits everyone—from self to others to the environment.

Those actions that rise to the level of lifestyle, manifesting connectedness to nature in the form of care for the Earth, vary widely. Recycling, eating locally and organically, reducing consumption, walking or biking rather than taking fossil-fuel driven transportation, volunteering for habitat restoration projects, voting for pro-environment people and policies, making donations to protected areas, and choosing vocations that serve rather than pollute the environment are all examples. The research literature uses a range of such behaviours as indicators of whether or not people exercise care for the environment.

Mindfulness and Connectedness to Nature

Mindfulness is a form of connection. It can be defined as a state of awareness characterised by purposeful attention towards current experience with an open, non-judging, and accepting attitude (Malinowski, 2017). It includes awareness of one's emotions, cognitions, and mind states, as well as awareness of one's environment and relationship to others (Jazaieri et al., 2013). In a way similar to the effect of nature connection, mindfulness practices influence and regulate behaviours, and can enhance a person's focus on feelings and thoughts about the natural world (Barbaro & Pickett, 2016). Wang and colleagues (2016) demonstrate the effectiveness of "mindful learning" for improving connectedness to nature and strengthening values related to compassion. Mindful learning can result in breaking pre-existing thinking patterns and promote openness and the development of a new pattern of thinking where ''nature" and ''humans" overlap and become unified, thereby improving connectedness to nature (cited in Wang et al., 2016, p.3).

Effective Program and Personal Characteristics

Chawla and Cushing analyzed relevant theory and literature to define what they refer to as "education for strategic environmental behaviour" (Chawla and Cushing, 2007). Their interest was to build on the understanding of what contributes to people taking action to benefit the environment. To do so, they looked deeply at a broad range of factors, beyond childhood play and learning in nature with adult guides, to gain strategic insights. With meaningful nature-based experiences as the foundation, what else is a significant influence on actual behaviours? Programs and structured activities were included in their review. Their synthesis indicates that programs designed to foster environmental commitment and action are most successful when they occur over an extended period of time, include opportunities to acquire and practice action skills, and result in some tangible success in accomplishing at least some of the intended goals. Some success, often beginning on a small scale, allows for the development of perceived confidence and a sense of efficacy (Chawla & Cushing, 2007).

Intention, affect, emotions, and a subtle range of influences are all part of the process. Knowledge alone will not make the difference**.** Direct experiences, self-directed learning and play, repeated exposures, a perceived belief in one's own personal efficacy, a caring mentor, and an emotional bond or connectedness—these are among the strongest influencers.

From Individual to Aggregate: The Issue of Scale

While it is important to identify the key factors that stimulate individual actions, when we consider the scale of the challenges facing humanity today, we must also be thinking about actions in the aggregate. What combines to make a significant difference?

Simply recognizing that individual actions add up to a larger whole is instrumental. A recent study about factors affecting people's likelihood to take action to affect global climate change is helpful. In this context, the researchers found that highlighting collective responsibility was more effective than appealing to personal responsibility (Obradovich & Guenther, 2016).

Others have established similar findings for challenges occurring on a large scale: a sense of personal efficacy combined with an appeal to collective responsibility is most effective. In other words, "(T)he effect of private action is limited unless it is combined with organizing for collective public change"(Chawla and Cushing, 2007; p. 441).

Social norms are powerful as well. Recent research by Jung and Metcalf (2017) indicates that the people you surround yourself with play a big role in whether you feel able to act on personal environmental values. In a study of ethical behaviour in the financial sector in Australia, they found that if your team appears to support being environmentally responsible, you will feel you are able to be so as well. In addition, environmental values appear to work best at a group level, meaning that we are able to understand aspects of the environment better if we try to understand them through group discussion.

Nature Connection through Education

All educational institutions can contribute to children, youth and adults taking action to conserve and protect natural systems. Opportunities include curricula and courses that are designed to include purposeful immersion in natural environments; place-based and experiential education; nature-based exercises that create space for reflection; and experiences that foster connectedness, including compassion and empathy (Selby, 2017; Sobel, 2008). Education can serve a powerful role to provide meaningful experiential opportunities for learners to match their values related to nature with personal actions that support those values in the larger world; that is, helping people match what they value with how they act in the world. See Appendix 1 for additional information.

Guiding Principles Based on the Evidence

Here is a summary of the major findings that may serve as guiding principles for creating a culture of conservation and care for the Earth.

What We Know from the Evidence*

Guiding Principles	Supporting Research
Knowledge is very important but is not enough on its own to cause people to take action to benefit nature.	Klockner, 2013; Bamberg & Moser, 2006; Monroe, 2003; Stern, 2000; Hungerford & Volk, 1990; Azjen, 1991; Azjen & Fishbein, 1980; Schwartz, 1977.
Connectedness with nature is a strong predictor of positive conservation behaviour.	Beery, 2013; Beery & Jorgensen, 2018; Otto & Pensini, 2017; Braun & Dierkes, 2017; Richardson et al., 2016; Geng et al., 2015; Wright & Matthews, 2015; Zylstra et al., 2014; Mayer & Frantz, 2004.
Meaningful, positive experience in nature is a powerful way of developing a connection with, or love of, nature that can in turn guide people toward care for the Earth.	D'Amore & Chawla, in press; D'Amore & Chawla, 2017; Beery, 2013; Chawla & Derr, 2012; Goralnik & Nelson, 2011; Hinds & Sparks, 2009; Chawla, 2006; Schultz, 2002; Kals, Schumacher & Montada, 1999; Chawla, 1998.
Positive, direct experiences in nature during childhood and role models of care for nature by someone close to the child are the two factors that most contribute to individuals choosing to take action to benefit the environment as adults.	D'Amore & Chawla, in press; Charles & Louv, 2018, in press; D'Amore & Chawla, 2017; Hsu, 2017; Broom, 2017; Chawla & Derr, 2012; Chawla, 2009; Chawla & Cushing, 2007; Wells & Lekies, 2006; Kals et al., 1999; Chawla, 1998; Tanner, 1980.
Experiences designed to foster environmental commitment and action are most successful when they occur over an extended period of time, include opportunities to acquire and practice action skills, and result in some tangible success in accomplishing at least some of the intended goals.	Chawla & Derr, 2012; Chawla & Cushing, 2007.
Social experiences in nature foster connectedness to each other and to nature.	D'Amore & Chawla, 2017; Zelenski et al., 2015; D'Amore, 2015; D'Amore, Charles & Louv, 2015; St. Antoine, Charles & Louv, 2012.

Direct experiences, self-directed learning and play, repeated exposures, a perceived belief in one's own personal efficacy, a caring mentor, and an emotional bond or connectedness are among the strongest influencers of individual actions to benefit the environment.	D'Amore & Chawla, in press; Charles & Louv, 2018, in press; Giusti et al., 2018; Kellert et al., 2017; Richardson et al., 2017; Richardson et al., 2015; Chawla & Cushing 2007.
People who develop a sense of place are more likely to want to protect it and to oppose the degradation of the environment.	Tonge et al., 2015; Ramkissoon, Smith & Weiler, 2013; Halpenny, 2010; Stedman, 2002; Vaske & Kobrin, 2001.
People who are strongly connected to nature tend to have high levels of well-being, self-esteem and personal growth.	Charles & Louv, 2018, in press; Becker et al., 2017; Richardson et al., 2016; Capaldi et al., 2014.
People of all ages who participate in nature-based activities tend to be happier and healthier than those who do not.	Charles & Louv, 2018, in press; Richardson et al., 2017; Richardson et al., 2016; WHO, 2015; Townsend et al., 2015; Chawla & Litt, 2013; Louv, 2012; Charles & Wheeler, 2012; Charles & Senauer, 2010; Kuo, 2010; Louv, 2008.

*This summary of the evidence is based on theory, research and practice derived from a current review of literature in peer-reviewed publications, books, book chapters and articles; recommendations from scholars and researchers in the field who submitted articles and other publications for consideration; conversations with an informal network of knowledgeable advisors; and review by members of the project oversight and writing teams, as well as others.

What Don’t We Know?
Where Are the Gaps?

What Don't We Know? Where Are the Gaps? Summary Statements

- ☐ While there are gaps in the research, the findings are consistent: meaningful, age-appropriate nature-based experiences contribute to a commitment and actions to care for the Earth.
- ☐ Most studies tend to be based on relationships; that is, most are correlational, and not measures of cause and effect.
- ☐ Additional well-designed and rigorous research is needed.

A Review of the Gaps

A strong predictor that a person will take conservation and pro-environment action is connectedness to nature. This may occur in a variety of ways, and at any age in a person's life. The evidence is strongest that childhood experiences are key. Less clear is the kinds of experiences that contribute to connectedness for adults, as well as their duration and frequency. How much is enough? And where? The evidence suggests that meaningful nature-based experiences can occur in a variety of places, including cities. Research in this and related areas is increasing rapidly. Despite the need for more details, the evidence overwhelmingly indicates that positive feelings for nature are critically important to care for the Earth.

Studies that look at the connections between nature-based experiences and human tendencies to connect with nature, including actions undertaken to benefit nature, tend to be based on relationships between factors. That is, they look at correlations. Cause and effect relationships are difficult to assess. Longitudinal studies—those that follow people over long periods of time—are rare, and needed. Some measures are currently available retrospectively. Adults, for example, are asked to look backwards in time to remember and describe what life experiences led to their behaviours to benefit the environment. This provides a helpful, while limited, base of understanding. Future research that monitors and evaluates the impact of lifestyles, programming and experiences that are implemented specifically to increase connectedness with nature and care for the Earth would go a long way towards filling this gap.

In sum, it is fair to say that the current body of evidence is generally consistent. Additional, well-designed and rigorous research is needed to further inform both policy and practice. So too is conscious attention to the wisdom still available today from Indigenous knowledge systems, especially about how to connect with and learn from nature over time. Despite those limitations, we know enough to say that connectedness to nature predicts pro-environment and positive ecological behaviours—that is, care for the Earth.

What Can We Do?

What Can We Do?

Implement Key Recommendations for Policy and Practice

By establishing a focus on fostering human connectedness with nature in policies and practices across diverse sectors, we have the opportunity to improve the human condition and that of the Earth itself.

Initiatives that embody the following characteristics are particularly encouraged:

- ☐ Education and child care policies that enable time outdoors in nature and experiential learning about nature in early childhood and throughout life;
- ☐ Health and elder care policies that deliver the health benefits of contact with nature for people of all ages;
- ☐ Community planning and urban development policies to create nature-rich cities that include urban parks and protected areas for the benefit of people and nature;
- ☐ Parks, outdoor recreation, and tourism policies that encourage family-friendly experiences; interpretive programmes; and outdoor, nature-based and experiential education;
- ☐ Arts and culture policies that promote the integration of culture and nature to develop a sense of oneness with nature while celebrating stories of connection and healing;
- ☐ Policies that encourage private sector investment in environmentally sustainable programming, infrastructure, and innovative solutions such as technology for connecting people with nature; and
- ☐ Policies that call for biodiversity conservation organisations to work across sectors so that all people, equitably and inclusively, experience the diverse benefits of connectedness with nature.

Additional guidelines for practice include:

- ☐ Use a variety of tools, including social media and community-based social marketing, to encourage those with high levels of connectedness to communicate and share their values and experiences with others, including children and youth, and to engage those not yet connected with nature.
- ☐ Allow for immersion and frequent experiences of caring for nature to encourage the growth of perceived efficacy, knowledge, connection and commitment over time.
- ☐ Prepare people of all ages to transfer their learnings about responsible environmental practices from their experiences in what may be distant settings, such as field trips and wilderness adventures, to their everyday lives at home.
- ☐ Recognise that people hold a variety of values related to nature, so design and implement policies and practices that will resonate with those values
- ☐ Help people do what they already do, such as having a social gathering or a meeting, but do it outdoors.
- ☐ Make it easy, make it social, and make it fun for people to connect with nature.

Overcome Barriers to Connectedness

Despite the fact that connectedness with nature is good for us and good for the Earth, creating opportunities to increase connectedness is not always a simple process. Many attributes of contemporary life throughout the world contribute to a disconnection between people and nature and present barriers to overcoming it. These may include, for example:

- ☐ Fear and perceptions
- ☐ Competing priorities
- ☐ Cultural differences
- ☐ Degraded environments
- ☐ Lack of resources
- ☐ Lack of transportation or access
- ☐ School and academic environments
- ☐ Urbanisation

Governments, organisations, and individuals across the world are implementing policies and practices to overcome these barriers. There is a worldwide trend, for example, to bring nature into cities, to enhance the opportunities for urban dwellers to experience nearby nature and to facilitate the many benefits that nature-rich cities can provide. Creating and supporting parks and protected areas, green schoolyards, community gardens, and wildlife corridors are all examples of actions underway in urban environments that in turn facilitate opportunities for people of all ages to connect with nature in meaningful ways.

An exemplary effort, the green schoolyards movement is international. Innovative land-use agreements within cities are being facilitated between school districts and community groups, making it possible for school grounds to be used by community members during hours when children are not using the space during regular school times.

Recognising that safety is a real concern in many circumstances—for example, in areas with high crime in cities—people are coming together to create safe outdoor opportunities for children. Some are creating rooftop gardens. Others are meeting as family groups to go together to public parks and schools with safe and secure nature-based play areas. Some organisations are implementing programmes to equip those less familiar with opportunities for connecting with nature with the knowledge and tools to experience the natural world. Parks Canada's Learn to Camp programme, for example, is designed to introduce new immigrants and urbanised families to the beauties and benefits of nature. Nature Clubs for Families are being formed where parents who are comfortable in the outdoors schedule dates and times for families with less experience to play and learn together on a weekly or monthly basis (D'Amore, 2015; C&NN, 2014). Group explorations, rather than solitary nature experiences, can be a wonderful bridge for celebrating cultural traditions. Families who like to be together can create new traditions in nature-based settings, potentially overcoming their fears while in one another's company.

Lack of resources is a significant barrier, requiring thoughtful action at all levels of society. Lack of resources can limit the ability for an individual to get to an outdoor place, to enter it, and to participate in an outdoor activity (Pergams & Zeradic, 2008). While many places are nearby and free-of-charge, admission, access, or entry fees can discourage people from going out to enjoy natural areas and to participate in outdoor recreation activities they offer. Whereas in some cases, these barriers can be real, in others they are perceived. For some people, the cost to enter once or many times can be a strain on their budget. Others perceive entry and participation to be expensive because they lack the information to make a rational assessment.

Each of these barriers can be addressed, with creativity, collaboration and commitment. Often it is mostly a matter of priorities. When people realize the many benefits they will have—from reduced crime to family bonding to improved physical health to peace of mind and overall well-being—the barriers can quickly dissolve. People and nature are both served in the process.

Connect to Nature Where We Live, Work, Learn and Play

Mounting evidence about links between nature-based experiences and conservation behaviours is stimulating action, including the development and implementation of policies and practices. Some derive from ancient wisdom, transmitted via many cultures and traditions. Others are newer, and are emerging out of a need to create and re-create nature-based experiences for people of many ages in an era when changes are rapidly contributing to humans' disconnect from nature in their everyday lives.

With the worldwide trend toward urbanisation, creating nature-rich cities and urban protected areas is an essential part of a long-term strategy to care for the Earth. The ultimate goal is to connect people of all ages to nature, wherever they are, in ways so meaningful and powerful that they will be compelled to take action on a regular basis to benefit the Earth. In return, people everywhere will experience the benefits of nature for themselves, their families and their communities.

The urban environment has a critical part to play, where daily experiences within nature-rich cities can potentially transform the way we live, work, learn and play. By designing our city environments in ways that seamlessly weave in opportunities to experience nature, we can kindle connections to nature that achieve an array of social, economic and environmental benefits. In the city of Bogota, for example, a recent study found that individuals visiting larger city parks experienced high levels of connectedness to nature and feelings of human-nature interdependence (Scopelliti et al., 2016). The presence of nearby parks, however, may not be incentive enough for some people to visit. Urban green spaces seem to be most successful at attracting diverse population groups where these feature social engagement and participation elements (WHO, 2017). In addition to ease of access, it is also important that urban greening policies support activities that enhance human-nature integration in order to improve human and environmental health in cities (Lin et al., 2014). The success of this approach will rely on insightful and long-term investment strategies that not only increase the availability and diversity of green and blue spaces across our urban landscapes, but also implement policies and practices that increase people's opportunities to connect with nature.

For many of us, connecting with nature begins at home or nearby: in urban environments, on farms, in remote wilderness areas; in schools, care centres, businesses, hospitals and shopping areas; at nature-based children's museums; at zoos, aquariums, and botanical gardens; in places of worship, community centres, parks and public places—wherever people are, alone and with others, they can engage in practices that emphasize and support their connectedness to nature. Doing so contributes to their own health and well-being; that of their families, friends and co-workers; other species; and the Earth itself.

Design for Biophilic Values to Connect People with Nature

In whatever the setting, connectedness to nature will be enhanced if the place and related experiences are designed to engage one or more of the following human biophilic values: contact, emotion, meaning, compassion and beauty. Usefulness and scientific understanding are also important biophilic values for some people, but as a sole focus are unlikely to lead to the development of a connected relationship with nature.

What does this mean in a practical sense? It means that we must envision people actively connecting with nature with direct contact through their senses, such as listening to birds in a park, smelling flowers in a garden, or simply noticing nature. We must be aware of the emotions that may be aroused—awe, a sense of joy, excitement, fear of the kind that is associated with an adrenalin rush followed by exhilaration, curiosity, peacefulness, gratitude, playfulness and relaxation are examples. An emotional connection can instill care—getting to know a place, and its living inhabitants, whether birds, bees or other animals, builds the kind of connection that leads to action among some. In others, meaning can be engendered through seasonal traditions when a person finds and gets to know a place that, for example, comes to represent a place for prayer; a family gathering spot for fun and stories, celebration and play. Compassion is often tied to emotion when feelings are aroused that lead to a form of affection and bonding that translates into action such as raising funds to protect a natural area, re-vegetating a highly used park, or organizing service projects. Beauty is a strong biophilic value for some people and is key to well-being benefits. Imagine the sense of wonder and awe that comes on a fresh spring day when everything is alive with new growth, or the peaceful blanket of snow on city streets in an early dawn where footsteps have not yet marked a path. These kinds of relationships can also be combined with others to encourage a meaningful relationship with nature. For example, the contact, meaning and beauty of growing food to eat in a community garden or finding wild herbs on the edge of a city park creates a kinship through a form of respectful usefulness. Yet for others, wonder and joy are gained through the insightful exploration for a scientific understanding of plants and animals.

All of these are forms of connection that can occur any place, including in cities, and all are examples of the kinds of processes and experiences that develop people's connectedness to nature which, in turn, lead to and accompany responsible action.

Specific Recommendations for Natural Resource Professionals and Policymakers

(Excerpted and adapted from Harbrow, in press)

Increase children's contact with nature and the outdoors as an investment in future conservation engagement and recreation behaviour. Such contact also has the potential to provide present and future health benefits. Therefore, make it a priority to connect children with nature through nature-rich landscaping around their homes, schools, and child care centres; low-cost, family-friendly experiences; interpretive nature programs; and outdoor, environmental, place-based and experiential education.

Develop your audiences' personal and emotional connections with nature, which may be associated with a place or a particular activity. Focus on:

- Encouraging regular and repeat visits to the outdoors alongside efforts to attract new participants. This approach is likely to increase the health and well-being benefits for visitors and the economic benefits for the community.
- Engaging regular visitors who strongly relate to the specific locations they are using in order to enhance the quality of their experience at the site; e.g., this could include asking fishers or jet boaters to contribute to freshwater conservation or hikers to contribute to enhancing habitat for birdlife along a trail. This is likely to be more effective than seeking contributions for other locations or for more general or unrelated conservation issues.
- Reducing the barriers, e.g., administrative, cost, for experienced users of the outdoors to contribute to site improvements for areas they visit frequently.
- Identifying and developing programmes for locations where place attachment can stimulate visitors to contribute to conservation. This is most likely to occur at sites where there is frequent repeat use and where visitors spend significant time onsite, e.g., favoured family campsites where the same people may return year after year, and favoured recreation sites close to where people live.

Appeal to people who may lack a strong connection to particular natural areas, e.g., infrequent or first-time visitors and tourists, by offering:

- Experiences that are truly iconic and/or awe-inspiring while being mindful of risks.
- Sites that offer encounters with charismatic wildlife.
- High-use sites where the volume of visitors may compensate for the lower level of engagement and help to overcome fears.
- Sites where visits are led by friendly and knowledgeable guides who can facilitate successful experiences for visitors.
- Sites supported by infrastructure and facilities that encourage and support exploration and learning by nature novices.
- Reduced barriers for easy, satisfying, and meaningful experiences for first-time and infrequent visitors.

Key strategies consistent with the evidence for successful practices to connect people with nature, as well as evidence-based ideas and examples received through collaboration with hundreds of partner organisations worldwide, have been summarized in the #NatureForAll Playbook (2017), available at http://www.natureforall.global. These strategies are:

1. Bring children into nature at an early age, and continue through their life course: Let's provide opportunities for children and families to participate in fun outdoor activities and learning experiences.
2. Find and share the fun in nature: Outdoor activities can offer new and unique opportunities for people to connect with others and with themselves, all while enjoying the benefits of nature. Let's use a range of communication and marketing tools to share fun and beneficial experiences that can be enjoyed in nature.
3. Use urban gateways to nature: Let's use urban parks, gardens, museums, zoos and aquaria to connect urbanites with nature and let's invest in "greening measures" to provide access to nature where people live, work, and play – by greening hospitals, clinics, workplaces, prisons, alleyways, and schools.
4. Embrace technology: Just as digital technology is used to connect people with each other around the world, it can also facilitate moments of connection between people and nature. Let's continue to find new and innovative ways to use technology as a bridge rather than a barrier to nature.
5. Share cultural roots and ancestry in nature: Let's provide opportunities to explore and share traditional stories, language and knowledge with local communities and with the broader public. Together, let's cultivate a world where connections with nature and each other are valued.
6. Seek out diverse partnerships: To reach our conservation goals, action is needed from most sectors. Let's reach out and build partnerships that are inclusive and expand our abilities to connect with new audiences, increase engagement and tap into new areas of expertise.
7. Empower a new generation of leaders: Mentorship, education-work experiences, and youth leadership and advocacy training provide young leaders with the skills and confidence to advance in the conservation field. Let's work together in intergenerational partnership to inspire those around us to connect with nature.

Conclusion:
A Call for Inspired Action

The time is now. The evidence is clear. One of the most important things that any of us can do for ourselves, those we love, people throughout the world, and the living systems that support us all is to connect with nature.

That connection can start in the simplest of ways, beginning in childhood and renewing through all the stages of life. It can take many forms, and occur in many ways. It requires places and spaces for people to connect with nature's richness and complexity from backyards to apartment rooftops, on city streets and rural roadways, on school grounds and in urban neighbourhoods, from wild protected areas to urban parks.

Connecting with nature helps to bring us all peace and good health, and provides the foundation for resilient, healthy ecosystems, communities, and economies to thrive and remain for generations and generations to come.

APPENDIX 1

Education and Society

Nature Education in Schooling

Early Childhood
There is a vibrant and growing trend to create and offer nature-based preschools and kindergartens (Sobel et al., 2016). Such approaches have been integral to early childhood education in Scandinavia and Germany for generations. The North American Association for Environmental Education's Natural Start Alliance reports remarkable growth in numbers of such schools in the US and Canada in just the past few years. The Child and Nature Alliance of Canada and its forest schools initiative is growing exponentially.

Elementary and Secondary Education
Outdoor Classroom Day is a global campaign with a goal to make outdoor play and outdoor learning part of every school day for every child. In 2017, over 2 million children in over 100 countries took part. A programme evaluation found that 1 in 5 educators has since increased playtime and 44% have made more time for outdoor lessons (Project Dirt, 2018).

Numerous resources are available throughout the world to assist educators in integrating ecological concepts and experiences throughout K – 12 curricula. The Centre for Environment Education in India is one example, as is the IUCN Youth Voices Curriculum Sourcebook. The Global Environmental Education Partnership (GEEP) is another. GEEP is a global initiative comprised of environmental education policy makers, providers, and practitioners who represent government and/or nongovernmental sectors in countries throughout the world. The GEEP was launched by the United States Environmental Protection Agency, the Taiwan Environmental Protection Administration, and the North American Association for Environmental Education in 2014 to build capacity in member countries to strengthen and institutionalize environmental education, focusing on policy, professional development, evaluation, and best practices.

The Udeskole movement in Denmark is notable for its conscious approach to integrating nature-based experiences within the curriculum of schools. The practice appears to be growing, and the movement includes some promising elements: udeskole tends to be implemented with students on a weekly or bi-weekly basis; the approach is cross-disciplinary and grounded in subjects and themes within the national curriculum; and the instructional experience is primarily local, embedded in where students live (Barford et al., 2016).

Natural Curiosity is a comprehensive resource that consciously and skillfully incorporates Indigenous perspectives and practices in its rationale and recommendations for educators. Developed in the

province of Ontario, Canada, it embodies the kind of teaching and learning that creates and sustains connectedness among learners of all ages (Anderson, et al. 2017). *Pathways to Stewardship and Kinship* is another good resource (2017).

Citizen science and other community service-oriented approaches are excellent ways to engage upper elementary, junior, and senior high school students. Journey North, Monarch Teachers' Network, Bioblitz are all examples. Applicable to all ages is the incorporation of school gardens within curricula (Williams, 2015), schoolyard habitat projects, and community gardens that are also used for educational purposes. The International Green Schoolyard Alliance and the Children & Nature Network are among those helping to encourage outdoor learning environments on school grounds for educational purposes. Evergreen in Canada and the Center for Ecoliteracy in the US are also among those promoting the benefits of nature-based teaching and learning.

Technology can be an ally to engage children and youth in nature-based play and learning. The New South Wales Office of Environment and Heritage developed and offers the WilderQuest programme that includes a website with games and video content that then combines with in-person Ranger-led tours and activities in national parks across New South Wales.

Nature Connection in Higher Education

As children and youth grow, practice at taking action and developing a sense of efficacy become increasingly important. One recent study explored this idea by investigating the impact of the Youth Leading Environmental Change (YLEC) program on participants' action-related competence. YLEC is a multi-national education program that engages university-aged students in learning and action projects related to environmental issues, with a specific focus on environmental justice. This study describes the impact on environmental action competence among participating youth in two of the YLEC countries: Uganda and Germany. Overall, findings indicated that the YLEC program helped participants from both countries broaden their previous knowledge and experience to activate higher levels of pro-environmental engagement and action. This was especially evident in the degree of initiative taken by the Ugandan youth in utilizing the resources and opportunities made available through the project. Participating Ugandan youth formed strong and long-lasting connections with community resources, which gave them opportunities to engage in environmental actions that previously were unavailable to them. This outcome reflects Ugandan cultural values of mutual responsibility and collectivism. In Germany, YLEC was effective in exposing youth to the assumptions born of privilege. This awareness inspired new ideas for action based on promoting environmental well-being on a global scale. The findings suggest that multi-national projects can be effective in building on cultural and social diversity to help university-aged youth become practiced, confident, and capable environmental actors (Dittmer et al., 2018; Riemer et al., 2016).

Goralnik and Nelson (2017, 2015) report on an interdisciplinary experiential environmental philosophy (field philosophy) course at Oregon State University that was delivered 2008 – 2012 in Isle Royale National Park, Michigan. Their aim was "to study if and how wilderness experience, coupled with a care-

based and community-focused curriculum in place-based ecology and environmental ethics, could help students develop empathy for nonhuman nature" (Goralnik and Nelson 2015). The authors concluded that "experiential environmental learning focused on the development of empathy can provide a meaningful path for students to bridge moral agency, environmental attitudes and knowledge, and citizenship skills and behaviour so they can connect their values with action. These results have consequential impacts for sustainability learning and action" (Goralnik and Nelson 2015).

Nature Connection throughout Society

People throughout society can incorporate ways to connect with nature in their working lives. Scientists, medical and well-being practitioners, and educators can all find places for fostering nature connection in their profession. So too can manufacturers concerned about employee well-being, architects who create spaces in which people live and work, and city planners who impact how people access nature. No profession is separate from nature, however distant it may seem. However, most of our education institutions do not provide nature connection experiences and even fewer offer tools to create connection. There is a need for a societal shift so that the experience and practice of connection are part of preparation for a responsible citizenship throughout our lives. The Children & Nature Network coined the phrase, "Green play to green pay," as a way to convey the message of the importance of connecting children to nature in their growing years and carrying that ethic to work in whatever field they choose. As mentioned earlier in relation to education, citizen science is also useful as a nature connection activity for adults.

Visit www.childrenandnature.org and http://www.NatureForAll.global for additional examples and resources.

APPENDIX 2

Policies and Practices to Connect People with Nature

There are many policy initiatives underway at every level. These are some prominent examples.

International

United Nations, IUCN and Other Multi-national Bodies

The United Nations Convention on the Rights of the Child includes a right to an education that involves respect for the natural environment. Passed in 1989, 196 nations have signed it. There is an effort underway to have the Convention include a child's right to nature. In the meantime, other initiatives are progressing.

In 2015, the United Nations passed Sustainable Development Goals (SDGs). Achievement of the SDGs will require increased attention to connecting people with nature. Several goals are directly or indirectly related to nature experience and connectedness. For example, Goal 4 of the United Nations' Sustainable Development Goals (2015) states, "Ensure inclusive and quality education for all and promote lifelong learning." In the context of sustainable development, this education and lifelong learning must necessarily be connected to the living Earth. SDG 4.7 states: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Enhanced efforts to connect people from all walks of life with nature will contribute to achievement of several other SDGs including Goal 3 (e.g., 3.4 health and well-being benefits of time in nature), Goal 4 (e.g., 4.7 experiential education, as noted above), Goal 8 (e.g., 8.9 sustainable tourism that meaningfully connects people with nature), Goal 11 (e.g., 11.7 access to nature-rich green and blue spaces in urban environments), Goal 14 (conservation and sustainable use of the oceans, seas and marine resources), and Goal 15 (protection, restoration and sustainable use of terrestrial ecosystems).

The Convention on Biological Diversity (CBD) is an international treaty and one of the key legal pillars to guide multi-national commitments to conservation and sustainable development. One of the targets (Aichi Biodiversity Target 1) under its Strategic Plan for Biodiversity (Aichi Biodiversity Target 1) states: By 2020 at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. As is noted in the description of Aichi Biodiversity Target 1, addressing the direct and underlying drivers of biodiversity loss will ultimately require behavioural change by individuals, organisations and governments. However, while Aichi Target 1 addresses the issue of awareness, it does not address the important relationship between nature connectedness and conservation action.

DRAFT

Parties to the CBD should consider enhanced action on connecting people from all walks of life with nature as a means by which to achieve Target 1 and inspire pro-conservation behaviours, thereby accelerating progress towards achievement of the Strategic Plan and implementation of other aspects of the Convention. Post 2020, a renewed Strategic Plan should recognise growing societal disconnect from nature as an important indirect driver of biodiversity loss; and it should include strategies for addressing this disconnect in order to bring about the transformations necessary to halt biodiversity loss and achieve the UN SDGs. Evidence about effective strategies for reversing the influence of disconnect from nature as a driver of biodiversity loss, such as those presented in this synthesis, should be used to guide post-2020 target-setting. For example, a renewed version of Aichi Biodiversity Target 1 (or its equivalent in the Post-2020 Framework) should not only address awareness but also actions to increase connectedness of people from all walks of life with nature in order to inspire significantly-enhanced, broad-based public and cross-sectoral action on biodiversity conservation.

The International Union for the Conservation of Nature, whose members include governments, non-government organisations, and Indigenous peoples' organisations, has notably addressed the issues of children's disconnect from nature in its formal proceedings since the World Conservation Congress held in Barcelona in 2008 (IUCN, 2008), and culminating with the launch of #NatureForAll in 2016.

At the 2008 Congress resolution 105 requested the IUCN Director General to assist the IUCN membership in reconnecting people, especially children, and nature as a priority in order to assure responsible stewardship of the environment for the generations to come. In 2012, at the World Conservation Congress held in Jeju, Republic of Korea, more actions were taken, including a CEO Summit and Declaration on Connecting People with Nature which led to the incorporation of the theme of "Inspiring a New Generation" at the World Parks Congress in Sydney, Australia in 2014; the subsequent Promise of Sydney; and the Inspiring a New Generation North American Summit in 2015. The Members' Assembly at the 2012 IUCN World Conservation Congress also passed resolution 101. That resolution endorses the child's right to nature and a healthy environment. In 2016, at the World Conservation Congress held in Hawaii, the IUCN Members' Assembly passed resolution 85, "Connecting People with Nature Globally." This resolution called for the launch of #NatureForAll within the IUCN's Programme 2017-2020, in order to scale up the reach and impact of efforts to connect people from all walks of life with nature in order to increase support and action for nature conservation globally. #NatureForAll is now a growing global coalition of nearly 300 organisations working together to achieve this goal.

In 2018, the World Urban Parks Association (www.worldurbanparks.org) issued a policy statement on Children, Play and Nature that included a Call to Action to its members worldwide, stating "Access to active self-directed play in nature is fundamental to healthy childhood development." The organization urges its members to:

- Help educate peers and stakeholders on the important role parks play in children's health and well-being.

- Make children and young people a priority in the design and management of urban parks and open spaces.
- Create more unstructured play opportunities in nature through investments in both design and programming of parks and open spaces.
- Engage children and caregivers in planning and design of parks and open space, giving them a voice and seat at the table to better understand their needs and create more welcoming and inclusive spaces.

Non-Formal International Actions

The Oakland Declaration

"The Oakland Declaration on the Vital Role of Nature-Based Learning in Promoting the Well-being of People and the Planet" (Children & Nature Network, 2018) was developed by participants at the Children & Nature Network's 2018 International Leadership Summit, and subsequently signed and endorsed by people and organisations throughout the world. The Declaration defines nature-based learning, identifies its characteristics, and affirms its relevance to basic human needs and the health of the planet. In recognizing the critical importance of nature, the Oakland Declaration serves as an inspiration for the protection and regeneration of the biosphere on which all life depends. It calls upon children, youth, adults, communities, governments, and institutions of education, cultural development, health and civic life to come together to cultivate a world where all people have equitable opportunities to experience nature as a foundation for learning and wellbeing.

National and Sub-national Bodies

National and sub-national governments are beginning to address connectedness with nature in their environment-related policies. For example, in Canada, *Parks For All: An Action Plan for Canada's Parks Community* is an innovative and powerful example of national collaboration at all levels of government with Indigenous peoples. In June, 2018, Canada's Ministers responsible for national, provincial, and territorial parks endorsed the Action Plan, effectively making actions to increase connectedness with nature public policy.

2018 marked the release of England's "A Green Future: Our 25 Year Plan to Improve the Environment." The plan is remarkable on many levels, as official policy of the government with associated funding and diverse partner organisations. Focused on the health of the environment, the third of its six policies is "connecting people with the environment to improve health and well-being." Activities they plan to undertake to achieve their policy of "connecting people with the environment" include a commitment to "encourage children to be close to nature, in and out of school, with particular focus on disadvantaged areas," and to work with "partners to help children and young people from all backgrounds to engage with nature and improve the environment (25 Year Environment Plan, 2018)."

Parks and protected areas are prominent in tourism worldwide and have an important role to play in fostering activities that lead to care for the Earth. In 2018, Parks Canada introduced free admission for youth aged 17 and under, recognising that "by connecting with nature, youth will gain a better understanding of our urgent need to not only protect it, but maintain it for future generations."

The 10-Minute Walk movement aims to ensure that that there is a high quality park or green space within 10 minutes of every person in every city across the United States. The initiative has been endorsed by more than 200 city mayors, including those from the four largest US cities (New York, Los Angeles, Chicago and Houston) in recognition of the health, economic, community-building and environmental benefits provided by parks for urban residents.

Queensland, Australia has developed a series of position statements within the document, "Natureplay is Everybody's Business," available at www.natureplayqld.org.au. They rest on the position that nature play is essential for the healthy development of a child as well as the health of communities and the environment. They offer goals, objectives, strategies and policies tied to evidence in a well-documented publication that includes this position: Children need nature and nature needs children."

At the sub-national level, in two Australian states, Victoria and South Australia, there has been leadership at the Ministerial level to integrate health and nature. In Victoria, the Ministers for Environment and Health signed the Victorian Memorandum for Health and Nature in 2017 (https://www.environment.vic.gov.au/biodiversity/victorian-memorandum-for-health-and-nature). This coincided with the release of the State's Biodiversity 2037 Strategy in which one of the two primary goals was "Victorians Value Nature." In South Australia, the Ministers for Environment and Health issued a joint Ministerial statement on nature and health in 2016 (https://www.environment.sa.gov.au/topics/park-management/plans-strategies-and-policies/healthy-parks-healthy-people).

In Victoria, Australia's Victorian Public Health and Well-being Plan 2015-2019 highlights the importance of creating livable neighbourhoods to improve health and well-being, and recognises that interacting with nature can have a range of other benefits. The plan notes that parks and open spaces make important contributions to healthy, active communities and improved mental health and all local governments have produced health and well-being plans, the majority of which recognise the importance of outdoor spaces for health and well-being.

The "Healthy Parks Healthy People" initiative, which was developed under the auspices of Parks Victoria, continues to grow in Australia and is being adopted by other state-level and national-level agencies. The Healthy Parks Healthy People approach recognises that contact with nature is essential for human emotional, physical and spiritual health and well-being, while reinforcing the crucial role that parks and protected areas play in nurturing healthy ecosystems. The idea has been the impetus for a growing number of alliances at various scales in countries such as Australia (Parks Victoria, New South Wales, South Australia); USA (Healthy Parks Healthy People US, US National Park Service; Healthy Parks Healthy People East Bay; Healthy Parks Healthy People Maryland); Canada (Healthy Parks Healthy People Ontario Parks); New Zealand (Healthy Nature Healthy People); Colombia (Vitamin N Prescription); and parts of Europe (Healthy Parks Healthy People Finland, Natural HealthService Scotland).

As an example of the growing reach of these efforts, the US National Park Service (US NPS) adopted Healthy Parks Healthy People US as an approach in 2011, and is moving into a second phase to integrate health promotion more fully into park operations. A set of promising practices has been identified for expansion nationally. These practices include community gardens, open streets/cyclovia, smoke-free parks, and fitness challenges. One promising practice of note is park prescriptions (Vitamina N, Colombia; Park Rx, United States), where doctors and health care providers are referring their patients to parks to treat and prevent chronic disease. The US National Park Service leads a national Park Rx Day each April during national park week in collaboration with the Institute at the Golden Gate, National Recreation and Parks Association, and National Association of State Park Directors. In 2018, sixty-nine Park Rx Day events were hosted in 34 states to celebrate the role of parks in promoting people's health, and prominent health sector leaders, including the American Academy of Pediatrics, and the US Surgeon General joined in promoting the day through social media and news interviews.

As another example of leadership within the health sector, the American Academy of Pediatrics adopted a policy on nature and play in 2012, re-affirmed it in 2015, and is now on track for revision and adoption in 2018. The policy includes a call for pediatricians to "educate parents about the importance of children's play outdoors in nature. Spending unstructured time in nature, surrounded by dirt, trees, grass, rocks, flowers, and insects inspires children's play and offers physical and emotional benefits."

Local: Cities and Urban Areas

With the worldwide trend toward urbanisation, creating nature-rich cities is an essential part of a long-term strategy to care for the Earth. To provide the benefits of nature for all children, cities are launching initiatives in several areas such as opening up park resources to all residents, and accentuating natural features in parks; focusing on the venues where many children spend time, such as early childhood centers and afterschool time programs; actively cultivating a new generation of leaders through youth stewardship activities; and fulfilling the promise of shared use agreements by adding nature play and learning spaces to school grounds and vacant lots.

For example, The City of Madison, Wisconsin is one of seven cities across the United States partnering on the Cities Connecting Children to Nature project (C&NN, 2018), which strives to promote equitable nature access to children and families. Its most recent draft comprehensive plan includes strategies to provide equitable nature access for its citizens. Similarly, East Dunbartonshire, in Scotland, has an Open Space Strategy that sets out standards for the quantity, quality and accessibility of open space, including parks, gardens, play areas and nature reserves, for its population. A new National Park City initiative aims to establish London, UK as a National Park City and to develop a universal charter for National Park Cities that could be adopted elsewhere. Boulder, Colorado has had its "Growing Up Boulder" program (www.growingupboulder.org) since 2009 that involves preschoolers through high school students in city planning and design. Their projects frequently involve nature and mobility. Growing Up Boulder is part of international efforts to create "child and youth-friendly cities" that implement the rights outlined in the United Nations Convention on the Rights of the Child
(www.childfriendlycities.org).

Umbrella organisations and initiatives like Cities Connecting Children to Nature, ICLEI, the Nature of Cities, European Union's Green Week, Green Surge, the World Urban Parks Association, the IUCN Urban Alliance, C40 Cities, 880 Cities, National Park City, and Natural Systems and Sustainable Cities are providing practical tools and policy guidance to support local initiatives aimed at improving the sustainability of urban environments and the quality of life of urban populations.

In Brazil, a degraded quarry site was transformed into a "naturalised" golf course for the Rio 2016 Olympic Games, with more than 15,000 native plants transplanted and over 475,000 plants propagated from native seeds to stock the new course. The formerly barren space not only attracts golfers, but was also quickly recolonized by rare and protected species, including burrowing owls, sandpipers, and egrets.

The Parks for the Planet Forum was launched in 2015 by the Salzburg Global Seminar and IUCN as a multi-year effort to "position nature at the very heart of human health and well-being, security and prosperity across the planet." Among its guiding principles, it states that "nature experiences teach children to respect, care for, and becomes stewards of the natural world" and that "nature-based solutions are cost-effective, high-return investments that provide direct benefits for public health and education, improve living conditions, and build resilience to climate and environmental change." It calls for actions to "transform cities for children."

In 2017, as part of the Parks for the Planet Forum, 52 experts in urban planning, childhood development, conservation, environmental policy, and health gathered for the Parks for the Planet Forum's meeting on *The Child in the City: Health, Parks and Play*, to assess the evidence and accelerate action for nature and health to benefit children in a rapidly urbanising world. The resulting recommendations are:

- Ensure children of all age, backgrounds, income and abilities have equitable access to nature and play regularly and in meaningful ways to promote good health and well-being.
- Embed nature in everyday places used by children, such as schools, backyards, parks, playgrounds and city streets, to make the city into a natural outdoor classroom.
- Involve children in designing and planning natural spaces for recreation, education, inspiration and health, to give them ownership and pride in their local communities, schools and parks.
- Build curiosity, wonder and care for nature in children.
- Protect natural features across cityscapes and create an equitably distributed network of accessible green and nature-rich spaces that all generations can reach on foot.
- Connect cities with the broader ecosystems in which they are embedded, creating corridors for people, plants and animals to move safely across the city and into its surroundings.
- Establish more urban conservation areas to increase access to nature and connect cities to the broader protected area network.
- Work together through cross sectoral and multi-level partnerships to build an inclusive culture of health in cities.

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