

Annotated Bibliography

Mental Health & Climate Change

Exploring the relationship between individuals and their environment.

Considering mindful nature connection as a sustainable practice to integrate with conservation and outdoor education to enhance and support reciprocal relationships for human and environmental wellbeing in a rapidly changing environment.

The literature and research below exemplify my understanding that mindfulness and nature connection can support human health and wellbeing while simultaneously supporting the health and wellbeing of the environment. Having personal experience in the reciprocal relationship between myself and my environment I have noticed that engagement in mindful nature connection activities, outdoor recreation, conservation, and nature-based community programmes support my mental health and sense of wellbeing. Sharing my experience with others, I have learned that many people have similar experiences and understandings.

The reciprocal relationship between humans and their environment is best understood when we remember we are part of nature and what we do to ourselves we do to the Earth and what we do to the Earth we do to ourselves. Therefore, it is only natural that engagement in mindful nature connection will provide mutual benefits to wellbeing. Acknowledging and understanding this relationship and the benefits to both human health and ecological wellbeing, can help inform our policies and strategies to support ourselves, our communities, and our environments as the climate changes. Whether in education, the workplace, community engagement or personal pursuits, spending mindful time in nature can be an easy and low-cost way to boost our health and wellbeing.

Wellness initiatives can be designed to better promote, encourage, and invest in connecting people to regular exposure to natural environments in support of their mental, physical, social, and spiritual health. Likewise, conservation and environmental groups can engage more people to get involved in environmental stewardship by reminding us that caring for the environment is good for our health too. Community engagement and group activities add an additional layer of connectedness which is also very important in supporting a holistic model of wellbeing. This sense of meaningful agency, to care for both self and other, to remember our connectedness to the whole while doing our part in the present moment wherever we are, will be critical in giving people clear and practical direction and purpose in a rapidly changing environment.

Ausseil, A. G., Collins, A., Greenhalgh, S., Booth, P., & Samarasinghe, O. (2021). Environmental Stewardship & Wellbeing. *Ministry for the Environment and Manaaki Whenua Landcare*.
https://www.landcareresearch.co.nz/uploads/public/Publications/Working-papers-and-reports/LC3901_TechnicalReport.pdf

This paper explores the use of wellbeing indicators to represent the link between nature and people. The research aims to develop a structured, transparent, and repeatable process through review of international and domestic New Zealand literature on environmental and wellbeing indicators, develop a process to identify indicators that describe the contribution of nature to people's well-being using ecosystem services, and test their process with stakeholders to demonstrate its application to current government initiatives. The authors note that we have a "fundamental relationship with the environment" both influencing it and being influenced by it. We influence the environment through our management and use of resources, causing pressures and changes to the state of the environment. We also benefit from the environment and depend on it for food, energy, health, recreation, and identity (or the deeper connection we have with the environment). Since we are deeply intertwined with our environment it is important that environmental stewardship and related management decisions include consideration of our place within the environment.

The method used in this research for tracking the connection between nature and people's well-being in New Zealand involved two main initiatives:

- 1.) The state of the environment (SOE) reporting series led by MfE and Statistics New Zealand (StatsNZ). MfE is the government agency responsible for environmental stewardship, providing national direction through policies for the use of land, water, climate, and seas. MfE also has a legal responsibility to report on the State of New Zealand's Environment.
- 2.) The Living Standards Framework (LSF) developed by the Treasury is based on the OECD well-being framework to reflect people's well-being or 'capability of people to live lives that they have reason to value'. The LSF is composed of several elements, including domains of current well-being and four future well-being capitals (social, built, human and natural capital).

The authors of this paper suggest ecosystem services (ES): the benefits people receive from ecosystems, or Nature's Contributions to People (NCP): an alternative framing introduced by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) are appropriate indicators to track impacts and that these impacts are important in understanding how changes in the environment relate to people's wellbeing as reliable drivers of change.

They also found that conversation between participants were found to be as important as the outcome of the process. Using ES & NCP allowed them to bridge the gap between people and nature to develop storylines which enabled people to understand how nature supports their everyday lives. Understanding the connections and challenges between nature and people, their physical and spiritual needs become clearer. This process can then provide evidence-based data for central agencies to support sustainable investment decisions to raise the level of investment into nature and formalise the contribution of natural capital to well-being in the Living Standards Framework.

This paper demonstrates the values and benefits people get from nature to enhance the narratives around barriers and opportunities for change. Discussing the relationship between nature and people helps them understand the relationship from different perspectives and contexts, highlighting the challenges of managing the environment. While the concept of ecosystem services is anthropocentric because it focuses on the benefits nature provides to people, some argue that people are part of nature rather than simply being served by nature.

The authors conclude that building a stronger base of evidence on the interconnectedness between nature, ES, NCP, and well-being would be useful in better understanding the consequences of environmental variations like climate change. In addition to the direct links between human wellbeing, the health of the environment and conditions of ecosystems also need to be considered.

Barrable,A., Booth,D., Adams, D., Beauchamp, G. (2021). Enhancing Nature Connection and Positive Affect in Children through Mindful Engagement with Natural Environments. *Int. J. Environ. Res. PublicHealth*, 18 (4785).
<https://www.mdpi.com/1660-4601/18/9/4785>

Nature connection describes a positive relationship between humans and the rest of nature and has been recognised as a worthwhile goal of all education. Given its association with wellbeing, as well as the fact that it can predict ecological behaviours in children, there have been several calls for it to become central to environmental education, and an important tool in tackling climate change.

Previous research shows success of increasing nature connection in children and how nature connection can influence our feelings and emotions towards the natural world, informing our relationship and whether we consider ourselves a part of it. However, no previous studies have looked at mindful engagement with nature as a potential pathway to nature connection, how mindful engagement with nature can promote nature connection, positive affect and wellbeing in children.

Their study took place in a nature reserve in Wales and included 74 children, aged 9–10, who took part in three mindful activities. They measured nature connection in relation to positive and negative affect. The activities were designed to give participants mindful engagement with the natural world. The researchers hypothesised that children practicing mindfulness in nature will have increased nature connection scores, positive

affect following activities, experience decreased negative affect, and have longer lasting nature connection benefits.

There are many definitions of mindfulness, but this study considers the following two components to suffice:

- 1.) the self-regulation of attention that it is maintained on immediate experience, allowing for increased recognition of mental events in the present moment
- 2.) adopting a particular orientation toward one's experiences in the present moment that is characterized by curiosity, openness, and acceptance

The first mindfulness activity involved listening to nature sounds, the second involved mindful looking at nature near and far, such as flowers and mountains. The third activity was a pretend hunting game in which the children pretended to be animals. One group was the hunting animal (hyena) and the other was the hunted (deer). The roles were swapped, so all children experienced both aspects of the game.

While I personally would not have chosen the third activity as that sounds inherently stressful to me, the research still showed a significant small to medium effect of the activity on nature connection while positive affect significantly increased post-activity and negative affect showed a small decrease.

It could be argued that the time spent in nature, rather than the mindfulness activities, was the cause of nature connection. However, it was noted in the study that all the schools regularly undertake prolonged time in nature as part of their "Forest School" sessions. In addition, other studies have shown that simple contact alone doesn't always promote a deep connection to nature, but rather that the quality of the interaction matters and mindfulness is widely recognised as an effective pathway for quality connection.

Blaschke, P. (2013). Health and wellbeing benefits of conservation in New Zealand. New Zealand Department of Conservation.

<https://www.doc.govt.nz/documents/science-and-technical/sfc321entire.pdf>

This report is a literature review to better understand the relationship between conservation and health and wellbeing benefits with a particular focus on public conservation areas that are managed by New Zealand's Department of Conservation (DOC). The review took a broad approach when considering the types of natural environments that may offer health and wellbeing benefits and wide scope of what may constitute wellbeing. Currently, there is a large body of research to support that exposure to natural environments has positive effects on human health and wellbeing. However, further investigation of activities specific to public conservation areas is required and of interest to DOC so they can better understand the relationship between conservation and human wellbeing.

The report connects data and expertise required to analyse the relationship between conservation and human health. It also discusses the value of conservation measurable

by human wellbeing and describes what measures would improve the alignment between conservation management and human wellbeing. Recommendations from this report focus on requirements for research relevant to New Zealand's natural areas, and the need for a more integrated approach between DOC, other managers of public natural areas, and managers and stakeholders in the health and volunteering sectors.

Cianconi, P., Betro, S., & Janiri, L. (2020). The Impact of Climate Change on Mental Health: A Systematic Descriptive Review. *Frontiers in Psychology Public Mental Health*. <https://www.frontiersin.org/articles/10.3389/fpsy.2020.00074/full>

This paper is a literature review exploring the potential mental health implications associated with climate change. The authors reviewed 163 reports that were published prior to June of 2019. In their review they looked for associations between “classical psychiatric disorders” like anxiety, schizophrenia, mood disorder and depression, suicide, aggression, despair of changing landscapes, and phenomena related to climate change and extreme weather events and divided their findings into specific areas: “the course of change in mental health, temperature, water, air pollution, drought, as well as the exposure of certain groups and critical psychological adaptations.” What they found is that there is a strong link between natural disasters and mental disorders and the effects of climate change on mental health can occur before, during, or after an extreme weather event. The impacts can range from minimal stress to serious clinical disorders. Other consequences can include the effect on individuals and communities in everyday living of coping and adapting to severe change, along with a loss of sense of place. As natural disasters increase in severity and frequency it is reasonable that these events will impact and exacerbate mental health consequences as well.

Psychological stress will range from anxiety about uncertainty to trauma from the actual event, to the more long-term effects of disrupted social and community groups which may result in violence and struggles over limited resources and forced migrations.

Severe changes in weather patterns can also increase psychological phenomena such as seasonal affective disorders for those who are more sensitive to weather and meteorological conditions. Some people who are more sensitive to changes in temperature, barometric pressure, light patterns, air pollution, ionization, humidity and so on may be more biologically prone to suffer as the climate changes.

The connections between climate change and mental health are far reaching and complex. Some impacts will be clear direct cause links, like the psychological trauma from fires and floods, while others may be more subdued or complex, such as weather sensitivities that contribute to psychopathology.

Attempting to reveal the mechanisms of adaptation, derive clear definitions of what “normal” behaviour is under extreme conditions, and determine cause and effect in these complex situations is a challenging task. However, attempting to better understand the connection between mental health, resilience, and adaptations in light of the climate change can help us establish better interventions and support for a population's mental health and wellbeing, especially for individuals and communities

that are predisposed to an increased vulnerability. The authors recommend that “all of these issues need to be more extensively studied and clinical experience should be gained in order to support our provisional conclusions. The challenge of climate change will be protracted in the upcoming years. Therefore, this branch of “ecopsychiatry” will surely be supported by new data sets and further studies.”

Clayton, S., Manning, C. M., & Hodge C. (2014). Beyond storms & droughts: The psychological impacts of climate change. *American Psychological Association and ecoAmerica*. http://ecoamerica.org/wp-content/uploads/2014/06/eA_Beyond_Storms_and_Droughts_Psych_Impacts_of_Climate_Change.pdf

This report summarizes the impacts of climate change on human wellbeing to provide climate communicators, planners, policymakers, public health officials, and other leaders the tools they need to respond to these impacts and increase public engagement around climate change. Research on human wellbeing is particularly important given the relationship between experiencing and comprehending climate change and its impacts. Experiencing the direct effects of climate change can make people more likely to accept it, however psychological factors, worldviews and ideologies can complicate this link. Helping people understand the climate’s impacts on human wellbeing could be one way to increase people's willingness to take action in response to climate change. The impacts of climate change on human wellbeing will vary depending on an individual or community’s vulnerability to the psychological effects of climate change, the frequency and intensity of climate impacts, weakened physical infrastructure, other social stressors (i.e. racism, economic inequality, socioeconomic and demographic variables). The impacts will range from direct natural disasters like floods, hurricanes, wildfires, and heat waves, while other effects will be more gradual like changing temperatures, rising sea levels. Other impacts will be more indirect, like weakened infrastructure and less secure food systems.

Wellbeing is more than the absence of injury or disease; it’s also about human flourishing and resilience supported by a healthy mind and body in support of a healthy community and network of social relationships. Therefore, they divide the impacts of climate change on human wellbeing into three categories: mental health, physical health, community health. Mental health impacts can include, anxiety, and depression, post-traumatic stress disorder (PTSD). Research indicates women, children, and older adults are more vulnerable, especially to stress and anxiety.

Physical health impacts will range from physical trauma to infectious disease, asthma, and lung problems. Physical health impacts may interact with mental health impacts. Community health will be impacted by having a strong effect on the community fabric and interpersonal relationships. These types of impacts are understudied, but may include increases in criminal behaviour, violence, and aggression, as well as a loss of community identity.

This report concludes with two recommendations to help put research findings into action.

1.) Tips to Engage the Public on Climate Change

Strategies for crafting language and programs to help build positive understanding and action around climate change rather than ambivalence, anger, or resignation. Key recommendations include giving people confidence they can prepare for and help prevent further climate change, focusing on local conditions and customs, and acknowledging emotions that may be associated with climate change and its impacts.

2.) Tips to Prepare and Strengthen Communities

Strategies to strengthen communities' response to climate impacts. Key recommendations include strengthening community and social networks, involving and informing the community, working to create a sense of safety, and fostering optimism.

Department of Conservation. (2011). Benefits of connecting children with nature: Research in support of investing conservation education for a sustainable and prosperous future. <https://www.doc.govt.nz/about-us/our-policies-and-plans/education-strategies/national-education-strategy-2010-2030/benefits-of-connecting-children-with-nature/>

This is a concise report highlighting some of the popular research available to support initiatives to connect children with the natural environment, investing in conservation being one that the Department of Conservation is keen to highlight. Connecting children to the natural world provides benefits to their health and wellbeing while also fostering long-lasting responsible behaviours and an ethos of care for the environment.

This report cites Richard Louv's term 'nature deficit disorder' to describe the condition many children experience as a result of too much time indoors, behind technology screens. Many children are exposed to intellectual learning of climate change and threats to the environment while simultaneously feeling less intimately connected to the natural world, which has direct impacts on their mental health and wellbeing. Therefore, reconnecting to nature through regular, hands-on exploration, discovery and positive experiences can increase their health and wellbeing. Some of the benefits include increased self-esteem, resilience to stress and adversity, improved ability to concentrate, learn, create, be flexible and self-aware. Positive experiences in nature that allow children to discover, engage, inspire and provide a sense of wonder can also increase their love of nature, biophilia and help develop an ethos of environmental care and advocacy.

Department of Conservation. (2021). New Zealanders and the Environment, Domestic

customer segmentation research: New Zealanders engaging with the environment, biodiversity and conservation.

<https://www.doc.govt.nz/globalassets/documents/about-doc/role/visitor-research/nzers-and-the-environment.pdf?fbclid=IwAR0RuWdgNOpGlwJAQhJu4lKh8uKLgnRRbcC-F5blsEPSW-MLOiHdyd1n43g>

This report summarises customer research done by an evaluation agency called UMR for the Department of Conservation regarding New Zealanders' perceptions of the environment, biodiversity, and conservation. The aim of the research was to help improve DOC's understanding of its 'customers' (those who use or could potentially use) experiences in the outdoors to better inform decision making of public conservation land and waters. Their research was conducted between 2018 and 2020, which was pre-covid so it's acknowledged that results may be different today. The study involved focus groups, surveys and ethnographic analysis of journals, interviews and DOC's internal strategies.

The main findings of this research included the following:

- There's ample opportunity for DOC to more effectively harness New Zealanders' connection with the outdoors to support the environment and encourage action for biodiversity and conservation. Connecting people with nature is crucial to charting a better future for New Zealand.
- New Zealanders have a limited understanding of what biodiversity is, why it is important, and what impact it has—therefore, many do not participate in conservation. Understanding these barriers will provide a way to connect New Zealanders through positive messaging that may potentially encourage action. Connection, mindset and understanding are key elements to link together the facts and consequences of the state of the environment with positive, meaningful messages that support the reciprocal relationship to the environment which can guide actions of care and stewardship to preserve and enhance biodiversity through conservation.
- Engaging New Zealanders in outdoors activities is likely to encourage them to support preservation and conservation goals.
- Four broad domains were identified to classify people's needs, motivations and behaviours to engage with the outdoors, these include: Exploration, protection, self-oriented, and others-oriented. Within these domains, six customer segments were identified that have divergent perspectives on improving the environment, biodiversity and conservation. These types of activities include: mindfulness, social, enthusiastic (adventure seeking), stimulation seekers, close to home, and "other things" (sedentary/disengaged).

Of the six customer segments, those in the mindful, social and enthusiastic categories are more likely to take biodiversity and conservation actions, which highlights an opportunity to develop activities that make it easier for these segments to contribute. Among the stimulation seekers, there's interest in biodiversity and conservation but lack of understanding about how they can make a difference. People in the "Other Things" group have a sense of civic responsibility, but it has not translated to the outdoors and the close to home people may be keen gardeners but have a low interest in taking action beyond their own backyard. Therefore, more insight into the barriers facing these segments is needed to develop new ways to engage them.

Overall, there is a limited understanding of what biodiversity is, the state of the environment and what actions people can take to improve both of these. Therefore, simple communications across all six segments could improve people's awareness and engagement in taking positive action. Deeper analysis is suggested and development of the following types of activities recommended to provide a wider range of opportunities for New Zealanders of all types to get involved in supporting biodiversity and conservation:

- o Mindful actions can be taken at the start of a short walking track in a way that encourages people to share their knowledge with others
 - o Socially active people could take action while spending time with family/friends
 - o Enthusiastic actives could easily take action as a group by linking it to local community activities and emphasising the collective benefit
 - o Stimulation seekers could take action as a group and see the benefit they bring to their community through small steps
 - o Close to home people could take action at home or in their local community as part of their everyday lives, that builds on their current efforts
 - o Other things group could take action at home or in their community in ways that highlight the impact biodiversity will have on them personally.
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Eisenstein, C. (2018). *Climate: A New Story*. North Atlantic Books.

This book offers a different story to engage with regarding climate change. The author invites us to reimagine the boundaries, strategies and actions we take to heal ourselves and our planet during this time of ecological destruction.

Charles Eisenstein asks us to remember the early moments in our young lives that inspired us to care about the Earth and choose to become environmentalists. He also illustrates how our obsession with measuring the natural world in terms of how it will serve us and our consumptive desires has resulted in disintegration of togetherness and the "us vs. them" mentality.

He suggests the importance of going beyond discussions and the single focus on carbon emissions to see the broader picture which includes biodiversity, intrinsic meaning and value. When we look beyond the short-term benefit of resource extraction, we can better understand the sacredness of the beings and matter of the natural world. This is likely what we would've noticed or experienced during our early childhood. This sense of awe, connection and wonder helps us refocus our attention from the fear of pending doom back to the heart of the matter, which is the love we have for our planet, our one true home and all the inhabitants of the natural world.

Engaging in reframing the stories this way can provide critical emotional and psychological connections which will support our own human wellbeing while simultaneously inspire actionable steps to care for the earth. By moving beyond self-righteous othering, fearmongering, shame and blame into connection and love, we can more easily access a deep commitment to support ecological wellbeing for the good of the whole beyond our own, immediate self-interests.

"Climate change is inviting us to forge a different kind of relationship, one that holds the planet and all of its places, ecosystems, and species sacred - not only in our conception and philosophy, but in our material relationship. Nothing less will deliver us from the

environmental crisis that we face. Specifically, we need to turn our primary attention toward healing soil, water, and biodiversity, region by region and place by place... We must enact a civilization-wide unifying purpose: to restore beauty, health, and life to all that has suffered during the Ascent of Humanity...

if everyone focused their love, care, and commitment to protecting and regenerating their local places, while respecting the local places of others, then a side effect would be the resolution of the climate crisis.”

Harrington, S. (2020). How climate change affects mental health. Yale Climate Connections. <https://yaleclimateconnections.org/2020/02/how-climate-change-affects-mental-health/>

This is an article published in Yale University's "Climate Connections" newsletter in response to eco-anxiety about the future of climate change and trauma from current and past disaster events. Here the author suggests two distinct but connected ways that climate change can affect mental health. One is the psychological response to direct experience of a climate related event and the other is through indirect exposure by watching a disaster from afar or reading about it.

After direct exposure to a disaster, the most common psychological responses reported are "distress reactions," such as insomnia, scapegoating, irritability, risky behaviours like substance abuse, and losing interest in normal activities. While these reactions may lessen and heal with time, if not acknowledged and treated they may get worse and lead to longer term mental health disorders, such as anxiety, depression, post-traumatic stress disorder, and suicidal thoughts. Reports indicate it is very common to suffer depression after a natural disaster, which makes sense as depression is part of the grieving process.

Disasters can affect people differently, but some people are more vulnerable to the psychological impacts of natural disasters like people with lower socio-economic status that have less access to health care after a disaster. Exposure to extreme weather, particularly excessive heat and poor air quality is also linked to an increase in psychological effects. Watching the news or reading about climate change and natural disasters can also cause anxiety, depression, secondary trauma, and other psychological conditions. Some have referred to this as "eco anxiety" while others acknowledge the importance of these fears beyond superficial mental anguish, due to the reality of the situation, the fears are a genuine and appropriate response to a real crisis.

Emotional responses to the threat of climate change are increasingly common among children, people with pre-existing psychological conditions, and those who spend a lot of time thinking about climate change, like climate scientists. Research has shown that climate change can increase the risk for children to develop PTSD, depression, anxiety, phobias, sleep disorders, attachment disorders, and substance abuse. It will become increasingly important for all people to learn how to process fear, stress and grief in a healthy and supportive way.

Some suggestions for how to care for our mental health in a changing climate involve supporting ourselves and others when acknowledging, sharing and feeling our feelings since this will vary and different things will break people's hearts in different ways. Holding space for people to process grief and intense emotions may involve active listening so that people feel seen and heard while also acknowledging the feelings are normal and ok to feel, even if they hurt and are difficult. Feeling supported in community is also helpful, to grieve together rather than in isolation can lessen the burden of pain and loss. Connecting with communities for support is also very healing and empowering, whether coming together to share stories and common grief or to engage in collective action, both are helpful for processing and healing trauma, anxiety and other conditions. Here, the author references Joanna Macy's three-part framework for how to live through the "great turning," or the great unravelling:

- 1.) take action – an action that nourishes you and decreases burnout
 - 2.) do something to create the world you want to live in
 - 3.) Raise your level of consciousness (getting more scientific information, doing a consciousness practice like meditation, or spending mindful time in nature
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Harper, N., Rose, K., & Segal, D. (2019). *Nature-Based Therapy: A Practitioner's Guide to Working Outdoors with Children, Youth, and Families*. New Society Publishers.

This book was written by a group of counsellors, psychologists, and a professor, all who are actively engaged in offering nature-based therapies or activities to promote health and wellbeing. The inspiration for writing the book was to help children, youth, and families seeking help for a wide range of mental health concerns unplug from technology and reconnect with the natural world. And to share ideas about the potential of nature-based approaches to healing to inspire professionals across a variety of human service and educational fields who are working with children, youth, and families to partner with nature to create lasting impact and positive change.

Nature-Based Therapy in practice is offered as an antidote to the disconnection between humans and their ecological home. The therapeutic practices described in this book include:

- Developing sensory awareness of outer and inner landscapes
- Navigating risk in play
- Case examples with a diverse range of settings, intentions, and interventions

They also suggest the following core elements may serve as philosophical guidelines that influence the practice:

- Practitioner's relationship with nature
- Nature as co-therapist
- Full-body engagement, play, and risk
- Restoration and regulation

- Bonding and belonging

The practices offered in this book are designed to nurture nature as medicine, to allowing nature to facilitate movement, healing and balance to provide a guided experience that can transform a walk in nature into a multidimensional health-promoting experience.

Hayes, K., Blashki, G., Wiseman, J., Burke, S., Reifels, L. (2018). Climate change and mental health: risks, impacts and priority actions. *Int J Ment Health Syst*, 12 (28). <https://ijmhs.biomedcentral.com/articles/10.1186/s13033-018-0210-6>

This article is a comprehensive overview of climate change risks and the potential impacts to mental health. The authors provide clear discussions of trends and research currently available and include recommendations for priority actions that can be taken to mitigate and adapt psychologically to support wellbeing through the consequences of climate change.

The authors suggest that even though addressing mental health issues in relation to climate change remains challenging, there is great room and opportunity to advance the field of mental health and climate change through more research in this area as well as attributing mental health to climate change support, mitigation, mental health action and psychosocial resiliency. They also acknowledge that the impacts of climate change on mental health are already occurring and rapidly increasing, resulting in direct, indirect, and overarching effects that disproportionately affect those who are already vulnerable and marginalized. Thirdly, they suggest interventions to address climate change and mental health must be coordinated through global commitments on climate action and be rooted in active hope in order to address the problems in a holistic manner. Their work concludes with recommendations for actions that can be taken to address the mental health consequences of climate change.

In line with strategic efforts to address climate change, mitigation and adaptation measures that address the psychosocial impacts of climate change can provide pathways through policies, practices, behavioural interventions, community-based interventions, specific training, and pharmacotherapeutics. Some general approaches may include: primary care interventions, individual and group-based therapy, cognitive based interventions, and crisis counselling. Emotional resiliency may be sustained by engaging with art, literature, and spirituality. In addition to the above, the list below offers specific priority adaptation mechanisms to be considered:

- Policy responses: improving access and funding to mental health care;
- Surveillance and monitoring: administering epidemiological surveys after extreme weather events, and monitoring emergency department visits during heat waves and following extreme weather events;

- Practice: the application of a stepped-care approach to mental health that is often used in disaster mental health to support different levels of interventions depending on the timing of the disaster and the level of distress
- Preparation and response: climate change adaptation/resilience planning in the mental health system;
- Community-based interventions: climate change resilience plans that address psychosocial wellbeing; and,
- Special training for care providers and first responders: e.g. psychological first aid.

The authors acknowledge research which suggests that active engagement in preserving natural environments provides people with a sense of stewardship and personal investment that can help people overcome feelings of hopelessness, anxiety, and ecoparalysis and if people feel deeply connected to wild spaces, and other species, then threats to these are much more likely to be viewed as personal issues prompting action and care. They noted research also that states biodiversity in natural environments is important for human health and wellbeing and has a positive effect on mood, attention and cognition. It is acknowledged that practicing Shinrin-yoku (forest bathing) to immerse the senses in nature can also reduce stress and anxiety.

Kabat-Zinn, J. (2005). *Coming to our Senses: Healing Ourselves and the World Through Mindfulness*. Harper Collins

Jon Kabat-Zinn offers this book as an invitation to wake up to the present moment and live our lives on purpose as if they mattered, because they do. He suggests that in light of the unprecedented times and level of uncertainty of the changing environment that we are currently living in a very important time to ‘come to our senses.’ He offers substantial scientific information to support the practice of mindfulness as an effective pathway to practice paying attention on purpose without judgement to experience transformation and healing in our everyday lives. Through this practice of presence and awareness we can mobilise the resources that are always available within ourselves to help us choose compassion and sanity even during moments of chaos and stress. This book explores the definitions of mindfulness, which can be thought of as an “openhearted, moment-to-moment, non-judgmental awareness”. He provides examples on how to practice mindful meditation, along with discussions about why paying attention matters and how to engage mindfully with all our senses. He suggests that peace is available in every moment and that there isn’t a way to peace, but that peace is the way and what we cultivate internally is what will exist around us. Practicing mindfulness can bring us greater insight, wisdom, clarity and emotional stability as well. Since our truest place of power exists only in the present moment, then the practice of mindfulness can strengthen our ability to discern between things we cannot control, such as events from the past or predictions about what might happen in the future, to focus on and work with the things we can influence or control that exist in our present

moment experience. While this book is not written specifically for the theme of climate change, these practices will naturally support our individual and collective mental, emotional, physical and spiritual health and wellbeing by learning to be more calmly and peacefully engaged with our present moments as they unfold.

Macy, J. & Brown, M. (2014). *Coming Back to Life*. New Society Publishers.

Joanna Macy's work has been cited in several research papers above in regards to her work with wellbeing and climate change. She is a highly regarded scholar, eco-philosopher, teacher, activist, and author of twelve books.

In this book *Coming Back to Life*, she co-authors with Molly Brown who is a teacher, trainer, counsellor, and author of four books on psychology and Earth-based spirituality. This book is an offering which serves as a guidebook to help navigate the frustration and grief experienced by those who are paying attention to and care about the reality of what is happening to our Mother Earth. It's acknowledged that while many people feel called to help and to respond to the ecological destruction of our planet, we can often times feel overwhelmed and immobilised which affect our ability to cope in daily life. The authors show us that grief, anger, and fear are healthy responses to threats to life, and when valued and honoured can release us from the paralysis of panic and grips of fear, they refer to this process and revolutionary practice as the "Work that Reconnects." This reminder seems an incredibly timely and important understanding for the health professionals around the world as mental health issues are only continuing to rise and that we need to be very careful to avoid causing unnecessary suffering, to avoid pathologizing the normal state of the human condition and all the appropriate emotional responses that accompany that, even if they may be unpleasant states to go through and bare witness to.

"It is hard to believe we feel pain for the world if we assume we're separate from it. The individualistic bias of Western culture supports that assumption. Feelings of fear, anger or despair about the world tend to be interpreted in terms of personal pathology. Our distress over the state of the world is seen as stemming from some neurosis, rooted perhaps in early trauma or unresolved issues with a parental figure that we're projecting on society at large. Thus we are tempted to discredit feelings that arise from solidarity with our fellow-beings."

The caution here is that sometimes empathetic people who may notice feelings of being connected to the whole and then assume they are responsible to provide all the solutions and fix all the problems of the whole, which can increase distress. This is where spiritual strength and engaged action alongside community can provide great support. This book helps weave together the spiritual component of our inner lives and

as the threads that connect us to our environment, along with the practical outward ways we can put ourselves into engaged action. Reminding us that we can use the strength and resolve of that deeper connection to fuel our outward actions and give us the courage to continue showing up for the work that reconnects. This book also reminds us that our outlook matters and will influence how we are able to engage with the world that it's critically important not to feed apathy and despair, but rather to foster and nurture "active hope" which is different than a passive hope "Dear God, please save us all" but rather hope in action of taking the steps needed to create the conditions and support the kind of world we want to live in.

Nisbet, E. K., Zelenski, J. M., and Grandpierre, Z. (2019). Mindfulness in Nature Enhances Connectedness and Mood. *Ecopsychology*, 11 (2).
<https://www.liebertpub.com/doi/pdfplus/10.1089/eco.2018.0061>

This research was inspired by previous research which indicates that spending time in natural environments can boost feelings of connectedness with nature and increase mood states. This study was designed to test the hypothesis that walking outdoors (compared to indoors) would produce hedonic benefits for participants, and that these might be further magnified by instructions to be mindfully aware of the surroundings. The authors also predicted that mindfulness would increase participants' nature relation and connection, again beyond the effects of simply being outdoors in nature. They tested these hypotheses by exposing 198 participants randomly to the following 3 scenarios each consisting of 20 minute intervals:

- 1.) A guided walk outdoors without mindfulness
- 2.) A guided walk indoors without mindfulness
- 3.) A guided walk outdoors with mindfulness

What they found is that participants who walked outdoors rather than indoors reported substantially more nature relatedness and better moods. Those who also received mindfulness instructions reported greater awareness of their surroundings, stronger connectedness with nature, and less negative affect, even compared to outdoor walkers without mindfulness instruction. While they found that mindfulness didn't necessarily increase positive affect, one explanation for this is that the practice of mindfulness elicited more subtle feelings of calm and peace which aren't necessarily measurable on current positive affect scales. Results suggest that mindfulness may enhance some beneficial effects of nature exposure and the aspect of non-judgmental awareness and acceptance of thoughts and feelings, in particular, correlates positively with nature connectedness. The practice of mindfulness in this study seemed to help participants become less self-centered and broaden their focus and awareness to their surroundings which helped facilitate a deeper connection experience. Since this practice is relatively simple and low-cost or free, it holds great promise in promoting and increase in concern and care for the natural world.

*Sidenote: this is very similar to the type of study I would love to help create in New Zealand with the addition of portable brain scan technology to confirm the underlying neurological impressions that the subjects are experiencing and reporting ☺

Pryor, A., Carpenter, C. & Townsend, M. (2005). Outdoor education and bush adventure therapy: A socio-ecological approach to health and wellbeing.
<https://link.springer.com/content/pdf/10.1007/BF03400807.pdf>

This paper explores the practice of outdoor education and bush adventure therapy to support human health and wellbeing. Through a combination of supportive social connections and an increased connection to the natural environment, these programmes can offer a socio-ecological approach to creating and supporting better health outcomes. While this paper mostly focuses on the benefits to human health in terms of physical, mental, emotional wellbeing, fostering a healthy relationship with nature will also have ecological benefits by increasing participants awareness of the importance of the environment and inspire actions to care for natural spaces beyond their recreational pursuits.

The authors emphasise the importance for adventure therapy guides to know how to support mental health in addition to the technical activity they are instructing. Since nature is a very therapeutic medium for people and adventure activities invite us beyond our normal comfort zones, participants may often be working through an underlying psychological issue (anxiety, depression, fear, trauma) while learning a new activity or spending an extensive period of time in nature. Therefore, they suggest that programmes be structured based on evidence-based recommendations, consider ethical implications in approach and delivery, and require training, supervision, accreditation, and professional development, to serve and support varying needs of their participants. With proper design, qualified instruction and a supportive social community outdoor adventures can offer an integrated approach to foster and support human, social and environmental health. "When small groups of people adventure together in natural environments, the health and wellbeing of humans, communities and the natural environment are enhanced."

Williamson, E. and Gaston, N. (2020). Nature and nurture: Connecting conservation and wellbeing. <https://natlib.govt.nz/blog/posts/nature-and-nurture-connecting-conservation-and-wellbeing>

This is a blog post article exploring the interconnectedness of human wellbeing and the wellbeing of our natural environment inspired by the combination of Mental Health Awareness week and Conservation week. The author makes the connection that we can benefit our own mental health and the health of the environment by embracing a holistic view, which resonates with and honours mātauranga Māori wisdom that caring for our environment is caring for ourselves.

In this spirit, it is reported here that the Department of Conservation and the Mental Health Foundation have partnered to promote the positive effects of nature on our wellbeing through the 'Healthy Nature Healthy People movement.' The initiative has been in place since 2016 and is based on the following principles:

- the wellbeing of all societies depends on healthy ecosystems
- parks nurture healthy ecosystems

- contact with nature is essential for improving emotional, physical, and spiritual health and wellbeing
- parks are fundamental to economic growth and to vibrant and healthy communities.

Also considered in this article is the holistic view of health and wellbeing (Hauora) from te ao Māori worldview which includes the following four pillars that are built upon the foundation of the land, or whenua:

- taha tinana (physical wellbeing)
- taha hinengaro (mental & emotional wellbeing)
- taha wairua (spiritual wellbeing)
- taha whānau (family & social wellbeing).

Both of the above perspectives agree that nature is healing. It can help us to build connections and restore balance in our lives and communities. Nature can also help us heal from grief, trauma, loss, depression, and other mental and physical health issues. Realising these connections and the fact that our natural world needs our attention and care too, it only makes perfect sense to combine our time, energy and efforts and work towards healing ourselves while healing the environment. There are many ways for us to participate in this activity through conservation, restoration, environmental advocacy, sustainability and outdoor education are a few. The author offers more specific advice in the article for children, families, classrooms and anyone who wants to get involved.