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Nature Rx: Addressing Climate Anxiety Through Eco Therapeutic Practices and Nature Immersion to Increase Earth Stewardship, Health, and Hope

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Nature Rx: Addressing Climate Anxiety Through Eco Therapeutic Practices and Nature Immersion to Increase Earth Stewardship, Health, and Hope

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Abstract

The biophilia hypothesis suggests an eco-psychological evolutionary bond between humans and nature that has developed through time. The strength of this bond has a profound impact on human health and wellbeing and the longevity of earth stewardship. With the worsening climate crisis unfolding in unprecedented and often traumatic ways, climate anxiety is a common burden that many people are dealing with on a daily basis. Each person can benefit from a nurtured relationship with nature to maintain baseline mental health and create a strong foundation for climate action. This project aims to bridge the relation between mental health, climate change, and the disconnect from nature. This project combines a detailed literature review on ecopsychology and nature-based therapy with a partner component: an instructional handbook entitled, “Nature Rx: Nature Connection and Eco Therapeutic Practices for Health, Hope, & Earth Stewardship”. The handbook was written as an instructional guide to nature connection and eco therapeutic practices for those who are struggling with climate anxiety, and anyone who wishes to deepen their connection to nature. The strategies in the book will help restabilize and maintain solid mental health and wellbeing. The success and prosperity of the human species and all life support systems depends on if earth’s interconnected ecological systems are able to continue to support and provide for life as they have for millennia; thus, humanity must revitalize our connection to nature and continue to develop and evolve within the natural ecological system as the biophilia hypothesis informs we are meant to do.

Key words: biophilia hypothesis, climate anxiety, climate change, ecotherapy, nature connection

Introduction and Background

Mental health and the state of the climate and nature are inextricably linked according to the field of ecopsychology, a union of ecology and psychology which examines the emotional bond between humans and nature. Ecopsychology recognizes that nature is not separate from humanity, but that humanity *is* nature, and thus there exists a “psychic and spiritual equilibrium” in each individual that guides the human conscience (International Ecopsychology Society). A nurtured and harmonious relationship with nature allows for a multitude of benefits that flow in both directions, human to earth, and back again. Strengthening the bonds between humans and nature can work to repair the damage done by centuries of cultural disconnect and alienation of nature that have persisted through far reaching Eurocentric ideologies. This disconnect from a biologically crucial relationship has likely contributed to the fact that in the United States, 1 in 5 adults experience some type of mental illness, a statistic that has been increasing in recent years, and represent one factor in an array of deep problems that the human race currently faces (National Institute of Mental Health, 2022). This figure represents a significant population of the United States whose overall quality of life, relationships, and personal wellbeing are negatively affected by mental illness or poor mental health. Intentional and increased time spent in nature is a prescription that many humans could benefit from. The motivations, strategies, and practices described in this report provide a path to repairing the largely severed inherent bonds between humans and nature. When these bonds are able to mend, they will produce a feedback of benefits on human health and to the natural

environment. To effectively advance as a species and revitalize a degraded planet, there is a desperate need for economically feasible, accessible, and effective strategies to improve mental health and wellbeing on a global scale, which can have scalable impacts on productivity, earth stewardship, and hope. This report discusses the psychology of climate change and uses research studies and statistics to explain the effects that this has on people's wellbeing, development, and overall mental health.

Human and Nature Connection

Ecopsychology and Bond with Nature

As humans evolved alongside nature for millennia, like all other animal species, an inherent and psychological connection formed between our human physiology and that of the natural world (Kellert & Wilson, 1993). Mental health and the state of the climate are inherently linked according to the field of Ecopsychology. Ecopsychology is a union of ecology and psychology that examines the emotional bond between humans and nature. Ecopsychology examines the inherent bonds between humans and nature, and how those relationships shape our worldview towards sustainability and environmentalism (American Psychological Association, 2020). Nature's connection to human evolution permeates through our physical body and our emotional mind, and the relationship that we have, or do not have, with nature influences our overall health, cognition, and disposition.

Cultural Influences

Our perception of nature is largely molded by culture. The persistent modern Western view is that humanity is superior to nature, and that nature is ours to dominate. This ideology reached its peak during the heights of industrialization in the recent few centuries, which brought rapid urbanization and development (Blaut, 1993). According to the Journal of Peasant Studies, many scholars now believe we are living in the Anthropocene, meaning that humans have drastically altered the state of the planet so much that we are totally separated from other forms of natural life. The concept of the Anthropocene should spark us to reconsider our role on the planet and begin to question the ingrained nature – human binary that keeps us separate from nature (Moore, 2017). Now more than ever, it is important to find peace and health in our communities and reintroduce ourselves to our local environments. The biophilia hypothesis and the emergent field of ecopsychology challenge these ingrained notions, and offer an alternate view, one that embraces the connection between humans and nature, and grants nature the reverence that must become commonplace in our societies (Kellert & Wilson, 1993).

Technology and Development

The emotional bond between humans and our natural environment has been severing over time, and since the dawn of the Industrial Age and technological advancements in the last two centuries, the human race has been catapulted into overdrive, overconsumption, and overstimulation. Affifi et al., explains in Science Direct that our cortisol levels, which impact stress, are often spiked from the constant influx of information from technology and social media. Our reliance on and use of technology breeds an overload of negative news, tragedies,

and stories, which sends us into a stress response state that affects our whole body, our minds, and our health (Affifi et al., 2018).

The National Land Cover Database reports that in the period between 2001 and 2016, almost half of the land use change in the United States affected forested areas (Dewitz & U.S. Geological Survey, 2021). This geological imaging data shows that the development of anthropogenic infrastructure is threatening and erasing natural land cover. Increasing limited access to nature in many areas due to increased development, industrialization, land loss, and habitat destruction is an unfortunate irony. as these are some of the very reasons that time spent in nature is increasingly needed for improving health.

The Biophilia Hypothesis

Biophilia, translating to “love of life” in Latin, is the hypothesis introduced by sociobiologist E.O. Wilson in 1993 suggests that as human beings evolved within nature, we thus seek connection to nature, and need connection to nature, to best thrive in all aspects of life. Reconnecting to nature has the power to connect the modern-day people with their ancestral and primal roots, reminding them of a time when people lived within nature, not entirely sheltered from nature. E.O. Wilson defined the biophilia hypothesis as “the innately emotional affiliation of human beings to other living organisms. Innate means hereditary and hence part of ultimate human nature” (Kellert & Wilson pp. 3329, 1993). It is widely accepted that all other animals have instinctual and biological connections and functions with the earth, and Wilson argues that humans do as well but have lost touch with this inherent connection that provides health, happiness, and productivity (Beatley and Newman, 2013). The biophilia

hypothesis challenges the nature domination perspective and offers an alternate view that embraces nature connection and views the human as a participatory member in the ecological system. This is an important concept from an eco-psychological standpoint, as it relates to the perceived and instinctual relationship between humans and nature. Through the lens of Ecopsychology, climate change is not just an attack on the natural world outside of the human bubble, it is an attack on humanity itself as part of the fabric of the natural world (American Psychological Association, 2020).

Mental Health

Mental Health and Climate Change

The worsening impacts of climate change are affecting many people psychologically, especially those who are studying in climate related fields, and who are on the trajectory to go forth and trailblaze climate solutions in service of the rest of humanity and the Earth (Thompson, 2021). A powerful emotional response to the devastation the planet is facing is normal and natural as human beings who are deeply woven in the Earth's systems. The mental health impacts of climate change are extremely consequential, given that according to researchers Corvalan et al., general mental health burdens are already a serious problem that most of the world is facing. Corvalan et al., warn that there are gaps between the severity of the mental health crisis and the resources and services needed to address it. It is critical that the severity of climate anxiety is recognized and given the importance that it demands.

Climate Anxiety and Burnout

A. Springer Nature Climate Anxiety Study, 2021

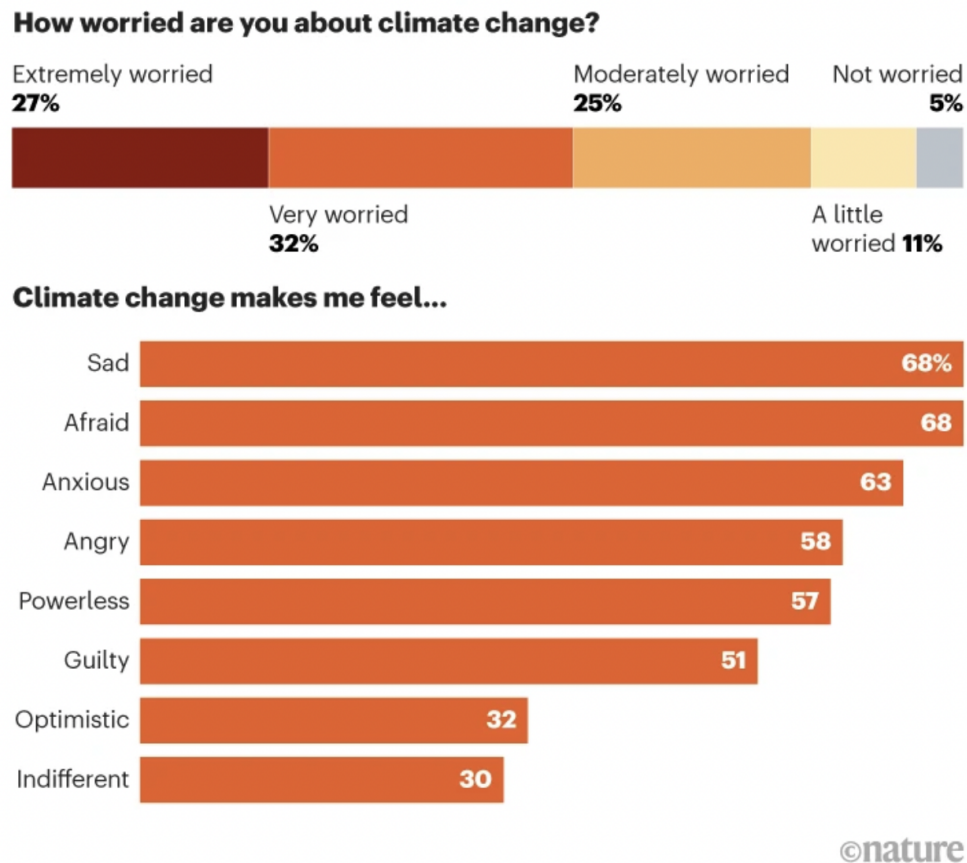


Figure A shows results from a 2021 survey that asked 10,000 young people across 10 how climate change made them feel. Of those 10,000 young people, 68% felt sad and afraid and 63% felt anxiety. 45% of survey takers said that their feelings about climate change impact their daily lives. These results show that there is a clear need for accessible and effective strategies to improve mental health surrounding climate change.

One cause of climate anxiety for many people is sadness, helplessness, and guilt around the loss of intrinsically valuable, ecologically important, and beautiful natural landscapes and species (Cáceres et al., 2022). There is a desperate need for economically feasible, accessible, and effective strategies to improve mental health and wellbeing.

One consequence of climate anxiety and chronic stress is the loss of productivity in one's career, which from a wide lens affects global development. This is especially problematic in a career that is dedicated to climate solutions and risk mitigation. It is more crucial than ever to have many passionate people motivated to choose and stay in careers that have a climate focus, whether it be in sustainability, remediation, or in local or national government. People speaking out and fighting for the climate can work in every field and across every industry, and it is important that these people stay motivated and resilient. One powerful strategy that is gaining ground to maintain baseline mental health is prescribed time in nature, using nature as a therapy for improved wellbeing (Nejade, 2022).

The Nature Prescription

Nature Deficit Disorder

Many people have become inside creatures, living completely enclosed inside houses and apartments, often working inside and with technology, and even traveling inside vehicles to other indoor destinations, all of which is in opposition to our nature as animals within the ecological system of the environment (Jimenez, 2021). Nature deficit disorder is a term coined by author and researcher Richard Louv and is the outcome of alienation from nature. This disconnect can impact the prevalence of illness and attention difficulties and has weakening

effects on environmental stewardship and ecological literacy, so the result is problematic for more than just each individual. According to Louv, Nature Deficit Disorder generally begins at a young age and increases throughout adolescence and adulthood at the onset of more rigorous academics, and eventually careers. Louv explains that a disconnect from nature has effects that span from our own health to the way we approach the world (Louv, 2005). Much of life today is experienced in the indoor settings of school, work, and home, while the explosion of immersive technology and media is keeping people indoors more often. Spending intentional time in nature can soothe the parasympathetic nervous system, stimulate curiosity, reduce inflammation, improve cognition, and nourish the inherent bonds between humans and nature (Nejade, 2022). Maintaining the body's wellbeing is crucial to succeeding in all areas of life, especially for those who are experiencing strong bouts of climate anxiety and fear.

Nature as a Preventative Tool

The concept of 'prescribing' time spent in nature is slowly gaining ground as a new strategy for decreasing illness and increasing health. Dr. Robert Zarr of Washington D.C. is at the forefront of these new 'prescriptions', advising that his patients spend time in their local parks and engage in outdoor activity, sparking a movement to make nature-based activity prescriptions a cornerstone in patient health care plans (Rhodeland, 2022). Due to the salutogenic effects of nature, spending time in natural environments can be a powerful strategy for improving health (Kellert & Wilson, 1993). The idea of a nature prescription is a challenge to the overly medicated tenets of Western medicine and is reminiscent of holistic practices regarding healthcare and treatment of ailment and disease. A nature prescription recognizes

the inherent and powerful healing effect of being intertwined with nature to the body and mind.

The Stress Reduction Theory (SRT)

The National Institute of Mental Health explains that stress can trigger an anxiety reaction, so the management of stress levels is crucial to maintaining good mental health (NIMH, 2022). Jimenez et al., explains the Stress Reduction Theory as time spent in nature activates the parasympathetic nervous system to regulate cortisol, the stress hormone in the body. Spending time in nature stabilizes the body's stress levels and allows for a more peaceful life (Jimenez et al. 2021). That is a powerful and positive impact that nature can have on humans, but it is fruitless when so much time is spent indoors in an increasingly urban existence. Strengthening the biologically inherent ties that bond humans to nature through positive and frequent nature immersive experiences is integral to maintaining wellness and stability in the body and mind. Unfortunately, access to nature is becoming more difficult as urbanization is increasing globally according to the Population Reference Bureau which tracks worldwide demographic data (PRB, 2022).

B. (Population Reference Bureau Demographic Data - Statista, 2022)

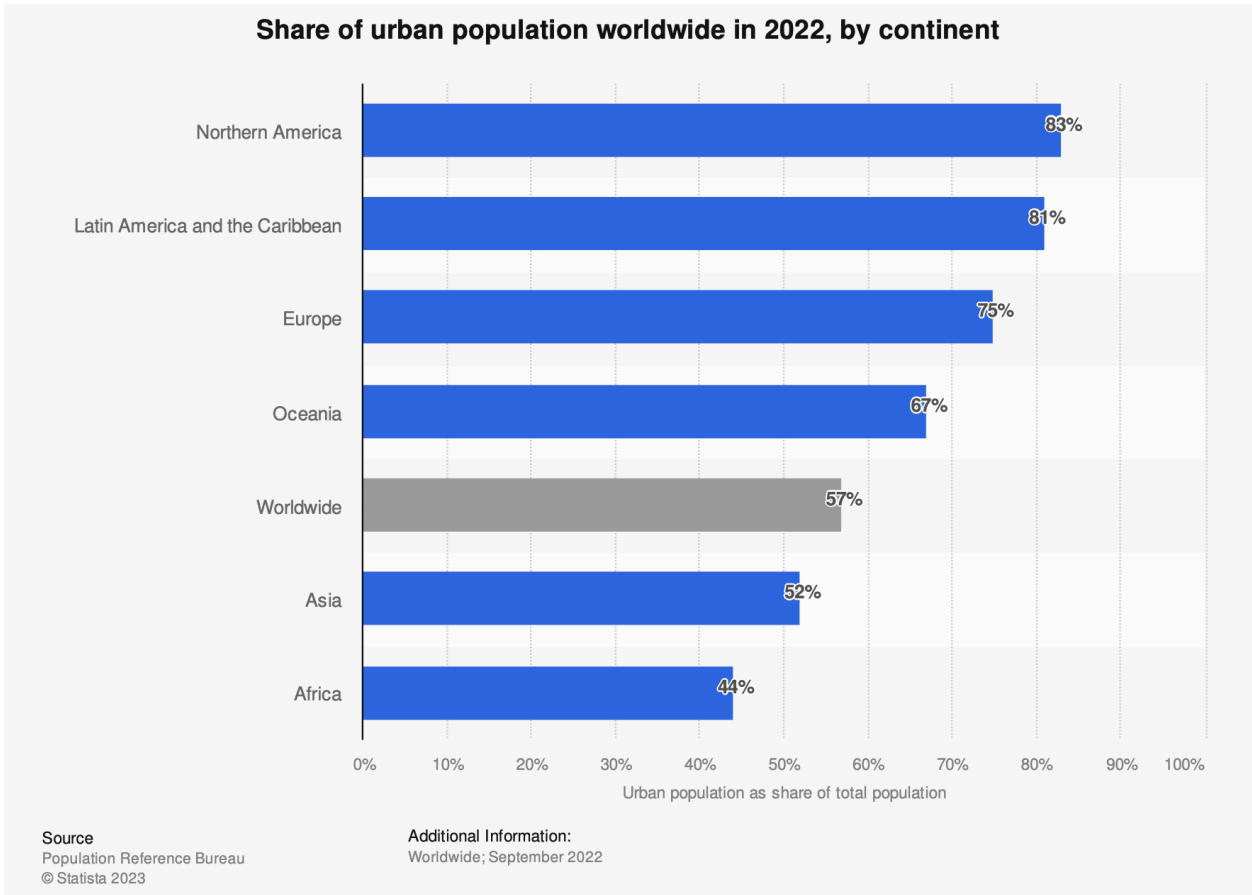


Figure B above shows the population demographics by continent for 2022. In North America, 83% of people are living in urban areas, leaving only 17% of people NOT living in urban areas (Statista, 2022).

C. Journal of Global Health Study, 2021

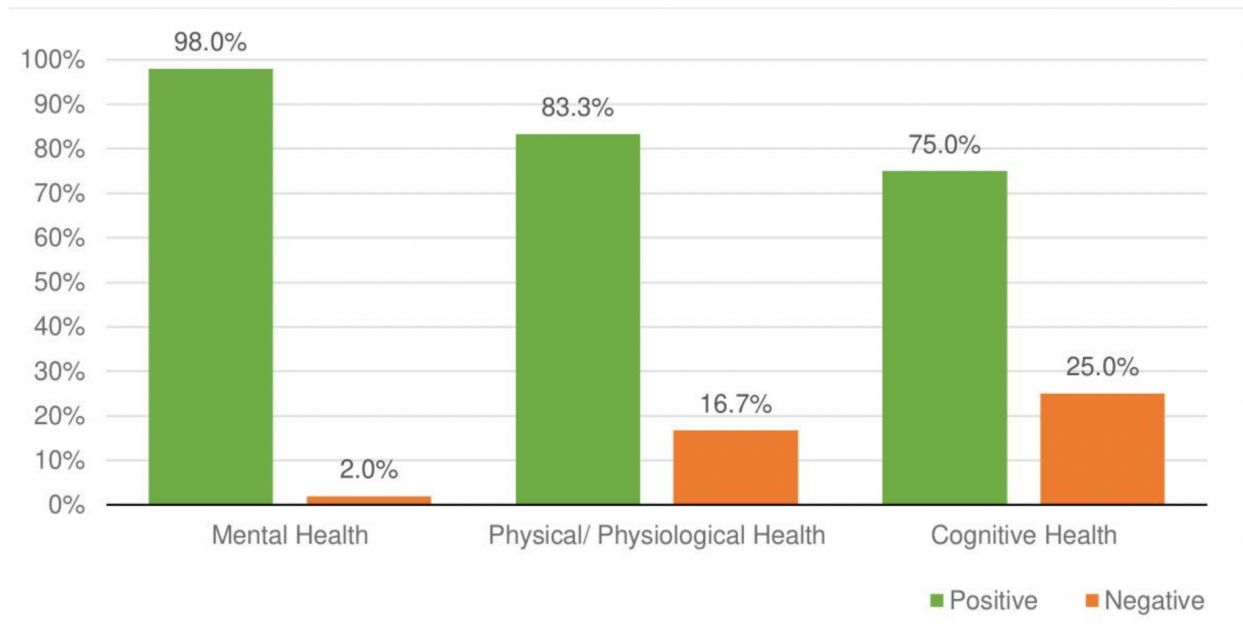


Figure C above shows the positive health effects of nature-based interventions, IE spending time interacting with natural outdoor environments. This was produced by a study in the Journal of Global Health on the effectiveness of nature-based interventions for mental and physical health. The effects were overwhelmingly positive, reporting improved mental, physical, physiological, and cognitive health for 98% of people (Nejade et al., 2022).

Figures B and C illustrate that the 83% of people living in urban centers with limited access to nature are likely severely deficient in the benefits that nature provides. The nature prescription uses nature as a tool to reduce stress and improve health. In a world with increasing urbanization that keeps losing land to concrete, it's more important than ever to seek experiences in nature to offset this and continue to fight to protect natural land. Eco therapy as a holistic and accessible practice has the power to change the mental health space

with great potential as a preventative and treatment option approach to treating climate anxiety and other mental health concerns.

Eco Therapeutic Practices

Introduction to Ecotherapy

The purpose of ecotherapy is to connect oneself to nature through immersive nature-based experiences on a frequent basis. Public health researchers Hinde et al., explain that ecotherapy can be used as a response to the worsening mental health crisis brought on by urbanization and reduced interactions with nature. Hinde et al., argue that ecotherapy should be an adequately funded nature based mental health service because of the potential benefits to support people struggling with mental health issues (Hinde et al., 2021). Eco therapeutic activities create physiological responses that most people are probably familiar with, a feeling of awe when gazing at a beautiful vista, exhilaration when completing a hike, and a peaceful weariness after a day spent in the sun. These feelings brought on by nature-based therapy ideally should be accessed frequently and intentionally in daily life. There are many eco therapeutic practices that may appeal to or be accessible to different types of people, all of which increase a connection to nature, and therefore an improved mental state.

Grounding

Grounding is a balancing practice that soothes the different systems in our bodies and regulates the nervous system etc that are often in overdrive in today's world. This practice is a radical recognition that humans are woven into the fabric of the natural world. The practice of

grounding, as defined by Chevalier et al. (2012), is when a person walks or stands outdoors barefoot, or spends time relaxing or sleeping outdoors, connected to the earth. This connection to the earth's surface elicits a transfer of electrons to the body. Growing evidence suggests that this practice may be a transformative form of therapy that can restore physical and mental dysfunction and general wellbeing and can be adopted as a form of accessible and free nature-based therapy (Chevalier et al., 2012). The science behind grounding is explained by the presence of continuously supplied free electrons on the earth's surface, and the fact that the human body uses electrons to heal inflammation and activate the immune system to neutralize harmful free radicals (Chevalier et al. (2012). By connecting the body with the earth's surface, there is an opportunity for the earth's abundant electrons to be absorbed by the body, where they aid in healing inflammation and lowering blood pressure. This internal physical healing can have positive effects on overall wellbeing as disruptive physical symptoms subside, allowing for a clearer mind and more easeful existence. These benefits on wellbeing contribute to better sleep quality, immunity, and mood regulation. The practice of grounding can be done anywhere that is safe to be barefoot, and can also be done lying down, or sitting directly on the ground.

To practice grounding, there are a few prerequisites in choosing an adequate site and making sure that you are best equipped to receive the benefits of the practice. Researcher Koniver explains that the site should be an area that feels safe and secure, where a person is able to fully relax and allow themselves to drop into the experience. Good locations for grounding can range anywhere from the backyard, a private spot along a hike, a field or meadow on a country drive, or a local park. It is best to wear minimal clothing, or ideally, clothing that is made with natural fibers such as linen, cotton, wool, or silk, as this will prevent

any extra barriers between the body and the Earth's surface (Koniver, 2023). Grounding is best practiced barefoot, as is taught in Traditional Chinese Medicine reflexology, our feet hold direct lines to each of the body's organs and systems, meaning that they are a powerful gateway to our body's health and wellbeing (Tiran & Chummun, 2005). Grounding can be practiced solo, or with a trusted person, and can be practiced as frequently as one's schedule and lifestyle allows.

Forest Bathing

Forest bathing is a deep intentional immersion in nature that can be done in urban parks, on trails, in fields, forests, deserts, or otherwise, and invokes a sense of being, rather than doing. Originating from the Japanese "shinrin yoku", meaning forest bath, and referring to the therapeutic effects of spending time in nature. The term was coined in 1982 by the Japanese Ministry of Agriculture, Forestry, and Fisheries, and is described as "making contact with and taking in the atmosphere of the forest", which yields positive physiological benefits (Jin Park et al., 2010). Forest bathing has taken root as an impactful eco therapeutic practice that can be accessible to us in any natural space where there is the opportunity for immersion of the senses into the natural surroundings. One caveat to forest bathing can be the presence of anthropogenic noise pollution in many places as urbanization continues to increase. This practice reaps the highest benefit when done in an area where the disturbance of man-made noise is minimal or ideally nonexistent. A study conducted on forest bathing in 2019 revealed that spending time immersed in a natural setting, as opposed to in an urban setting, results in lowered cortisol levels, lower blood pressure and a reduced heart rate, indicating an important and notable link between human health, and exposure to nature (Farrow & Washburn, 2019).

As of now, there is still limited recommendation on exact dosage or frequency to receive the most benefit from this practice, but it is likely fair to say that anything is better than nothing when considering how to implement a healthful activity into one's lifestyle.

Meditation

The practice of meditation is ancient and deeply spiritually and culturally significant. The World History Encyclopedia says that meditation was first referenced in the Vedic texts of ancient Indian Hinduism, which were a set of texts called the Vedas that informed the roots of the Hindu religion. The Vedic texts are considered among the oldest of religious texts in the world, and even existed as orally transmitted knowledge before being written around 1500-500 B.C.E. It is believed that the sounds of the Vedas are in actuality the sounds of the inception of the universe. Meditation is an important component in Ayurvedic science, which is a holistic system of total health care that has roots from around the same period as the writing of the Vedic texts (Mark, 2020). Practicing meditation is available to anyone and the benefits are cumulative, building as the practitioner gains experience. The purpose of meditation according to the Vedic texts is to reach one's true inner self, exploring the boundaries of our regular neurological and physiological condition, and eventually breaking those boundaries to reach the deep self, or consciousness. Meditation often uses the breath as a tool for connection to one's deep inner self. The Sanskrit word "prana" roughly translates to breath, or life force, indicating that the breath is a powerful tool for enhancing life (Sharma, 2015). A meditation may begin by focusing inward on the breath, and coming to a starting point of calm, slow, relaxed breathing before beginning a sequence of breath patterns. The power of meditation is storied, holistic,

and inherently impactful. In the context of ecotherapy, a study from 2020 reported that meditating within a stimulating natural environment resulted in a stronger connection to nature and desire for pro environmental behavior (Ray et al., 2021). Practicing meditation in nature is an introspective experience that also harnesses the benefits from the external stimulation of a natural environment. This is a form of ecotherapy that does not require any level of physical ability or exertion, and therefore should be accessible to most people.

Green and Blue Exercise

Green and blue exercise is any exercise done on land or in or near any body of water. This form of ecotherapy can be adjusted to each person's interest and ability level and will be effective no matter the activity. Rogerson et al. (2019) explains that exercising in a natural environment is "exercise squared" due to the salutogenic effects of nature coupled with physical activity. The benefits are greater than what they would be if the exercise was done indoors, or in a strictly urban setting. As noted in the Rogerson paper, the added benefits of performing exercise in nature are due to the fact that exposure to nature is salutogenic, meaning that it favors good health. It is recognized that natural environments are psychologically restorative; and natureful experiences work to reduce physical symptoms and mental feelings of stress, while increasing positive feelings and healthy responses in the body (Rogerson et al., 2019). The type of exercise done to practice green and blue exercise can be adjusted to satisfy many different types of people and activity and mobility levels.

Gardening

The process of gardening involves continuous and frequent interaction with nature. Gardening leads to ‘involuntary attention’, which is defined by psychologist William James as an effortless form of attention that encourages mental rest (Kaplan, 1973). Tending to plants also provides a small window into the function of nature, and the feeling of accomplishment when your plant does well. A study during the COVID-19 pandemic on the mental health impacts of gardening by researchers Egerer et al., revealed that people’s most valued reason for enjoying gardening was connection to nature. Of those respondents, 87% reported that the connection to nature aspect was of extreme importance in their gardening experience. The researchers concluded in an article published in the National Library of Medicine that gardening is an impactful way to aid in mental health and reduce stress, and that it should be adopted in the mainstream as a public health initiative (Egerer et al., 2022). Gardening can range from tending a few small pots on a balcony, or participating in a local community garden plot, and any amount or level will aid in increasing nature connection.

Nature Rx Handbook

Recommendation and Considerations

The instructional handbook that has been produced in conjunction to this report is entitled, *Nature Rx: Nature Connection and Eco Therapeutic Practices for Health, Hope, and Earth Stewardship*, and is intended as an invitation for anyone to explore their connection to nature and to the earth, and what that relationship may mean to them as they move through life. This book is a valuable tool for anyone who is interested in deepening a connection to nature and learning about the mental health benefits of nature-based experiences. In this

increasingly urban and globalized society, it is important to rebuild relationships with the local environment and ecology. As the fight against climate change continues to intensify and climate anxiety is seen at such high rates, it is extremely important to invest in mental health. This investment must prioritize accessible and effective mental health management strategies to be within reach for many people. Through eco therapy and nature immersion, people can find connection and value among the flora and fauna in their local communities, stabilizing their mental health and strengthening their resilience.

Distribution

Nature Rx will be distributed through multiple different outlets, in hopes of reaching a wide audience. Within UCSD, it will be offered to the counselors at CAPS as a tool for their student patients, as well as professors in the climate related disciplines who may wish to utilize the book in their curriculum, and to on campus environmental and climate clubs. It will also be sold online and potentially in brick-and-mortar independent bookstores, as well as offering a digital version as a PDF and available on kindle. The aim is that this handbook will reach people of many backgrounds, ages, beliefs, and ideologies, and spark a connection within them to explore their relationship with nature which created them.

Conclusion

For the last few centuries, many cultures have been out of sync with nature. With a strong baseline connection to nature, we have a better ability to positively impact our communities and the world, and act as stewards for the environment. Anxiety, grief, fear,

hopelessness are all valid and real experienced emotions and sensations that many people feel when exposed to the horrors of the climate crisis. These emotions are amplified due to the onslaught of information from globalized technology and social media, increasing urbanization and reduction of natural spaces, and largely indoor lifestyles. All of these factors contribute to anxiety disorders and mental health disorders that are consistently on the rise, leading to paralysis and difficulty and reduction of healthy behaviors and productivity. The disconnect from the natural world that most modern humans are subjected to in this era is harming not only the earth, but human health. There must be a reconnection to the fact that human beings, like all other beings on the earth, are meant to be within and bonded to the fabric of ecology and the climate system. An increase in earth stewardship is crucial to regaining a balance between destruction and preservation, and the more people that rebind and grow their connection to the earth, the more that vision can become a reality. Healthy and vibrant natural environments must be preserved not only for one lifetime, but for future generations of all species as well. Restabilizing the physiological baseline in each person that craves connection with nature is a strong first step towards positively evolving the ingrained ideologies and worldviews that inform the human - nature relationship. A more equalized balance between time in nature and time in developed society will provide the members of society the health, incentive, and bandwidth needed to effectively create change in their communities, social circles, and political systems.

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Works Cited

Afifi, T. D., Zamanzadeh, N., Harrison, K., & Callejas, M. A. (2018). WIRED: The impact of media and technology use on stress (cortisol) and inflammation (interleukin IL-6) in fast paced families. *Science Direct*.

American Psychological Association. (2020, April 1). Nurtured by nature. *Monitor on Psychology*, 51(3).

Beatley, T., & Newman, P. (2013). Biophilic Cities Are Sustainable, Resilient Cities. *Sustainability*, 5(8), 3328–3345. MDPI AG.

Blaut, J. M. (1993). *The Colonizer's Model of the World: Geographic Diffusionism and Eurocentric History*. The Guilford Press.

Blaxland, B. (2020, February 10). Hominid and hominin – what's the difference? *Australian Museum*.

Chevalier, Gaétan, Stephen T. Sinatra, James L. Oschman, Karol Sokal, and Pawel Sokal. "Earthing: Health Implications of Reconnecting the Human Body to the Earth's Surface Electrons." *Journal of Environmental and Public Health* 2012 (2012): 1–8.

Cáceres, C., Leiva-Bianchi, M., Serrano, C., Ormazábal, Y., Mena, C., & Cantillana, J. C. (2022). What Is Solastalgia and How Is It Measured? SOS, a Validated Scale in Population Exposed to Drought and Forest Fires. *International journal of environmental research and public health*, 19(20), 13682. <https://doi.org/10.3390/ijerph192013682>

Dewitz, J., and U.S. Geological Survey, 2021, National Land Cover Database (NLCD) 2019 Products (ver. 2.0, June 2021): U.S. Geological Survey data release, <https://doi.org/10.5066/P9KZCM54>

Ecopsychology, Deep Ecology and Eco literacy. (2017, November 17). International Ecopsychology Society. Farrow, M. R., & Washburn, K. (2019). A Review of Field Experiments on the Effect of Forest Bathing on Anxiety and Heart Rate Variability. *Global advances in health and medicine*.

Egerer, M., Lin, B., Kingsley, J., Marsh, P., Diekmann, L., & Ossola, A. (2022). Gardening can relieve human stress and boost nature connection during the COVID-19 pandemic. *Urban forestry & urban greening*, 68, 127483. <https://doi.org/10.1016/j.ufug.2022.127483>

Foster, R. G. (2020). *Sleep, circadian rhythms, and health*. The Royal Society Publishing.

Hinde, S., Bojke, L., & Coventry, P. (2021). The Cost Effectiveness of Ecotherapy as a Healthcare Intervention, Separating the Wood from the Trees. *International journal of environmental research and public health*, 18(21), 11599. <https://doi.org/10.3390/ijerph182111599>

Jimenez, Marcia P., Nicole V. DeVille, Elise G. Elliott, Jessica E. Schiff, Grete E. Wilt, Jaime E. Hart, and Peter James. "Associations between Nature Exposure and Health: A Review of the Evidence." *International Journal of Environmental Research and Public Health* 18, no. 9 (2021): 4790.

Joy H. Greenberg, & Gregory Greenberg. (2013). Native American Narratives as Eco ethical Discourse in Land-Use Consultations. *Wicazo Sa Review*, 28(2), 30–59.

Kaplan, R. (1973). Some Psychological Benefits of Gardening. In *Environment and Behavior* (Vol. 5). Sage Publications

Kellert, S. R., & Wilson, E. O. (Eds.). (1993). *The Biophilia Hypothesis*. Island Press.

Koniver L. (2023). Practical applications of grounding to support health. *Biomedical journal*, 46(1), 41–47. <https://doi.org/10.1016/j.bj.2022.12.001>

Louv, R. (2005, August). Nature Deficit: Is ADHD research overlooking the green factor? *Orion*, 70-71.

Mark, J. J. (2020, June 09). The Vedas. *World History Encyclopedia*.

McMichael, A. (2014). Climate Change and Children: Health Risks of Abatement Inaction, Health Gains from Action. *Children*, 1(2), 99–106. MDPI AG.

Mike Rogerson and Barton, Jo. “The Green Exercise Concept: 4: Two Intertwining Pathways to Health a.” Taylor & Francis. Taylor & Francis, October 8, 2019.

Moore, J. W. (2017). The Capitalocene, Part I: on the nature and origins of our ecological crisis. *The Journal of Peasant Studies*.

Nejade, R. M., Grace, D., & Bowman, L. R. (2022). What is the impact of nature on human health? A scoping review of the literature. *Journal of global health*, 12, 04099.

Park, B. J., Tsunetsugu, Y., Kasetani, T., Kagawa, T., & Miyazaki, Y. (2010). The physiological effects of Shinrin-yoku (taking in the forest atmosphere or forest bathing): evidence from field experiments in 24 forests across Japan. *Environmental health and preventive medicine*, 15(1), 18–26.

Ray, T. N., Franz, S. A., Jarrett, N. L., & Pickett, S. M. (2021). Nature Enhanced Meditation: Effects on Mindfulness, Connectedness to Nature, and Pro-Environmental Behavior. *Environment and Behavior*, 53(8), 864–890. <https://doi.org/10.1177/0013916520952452>

Rhodeland, A. (2022, June). Giving patients the power to self-prescribe nature. Children and Nature Network. <https://www.childrenandnature.org/resources/giving-patients-the-power-to-self-prescribe-nature/>

Share of urban population worldwide in 2022, by continent. (2022). In Statista Demographics.

Sharma H. (2015). Meditation: Process and effects. *Ayu*, 36(3), 233–237.

Thompson, T. (2021). Young People's Climate Anxiety Revealed in Landmark Study. Springer Nature, 597.

Tiran, D., & Chummun, H. (2005). The physiological basis of reflexology and its use as a potential diagnostic tool. *Science Direct*.

Zarr, R., Cottrell, L., & Merrill, C. (2017). Park Prescription (DC Park Rx): A New Strategy to Combat Chronic Disease in Children, *Journal of Physical Activity and Health*, 14(1), 1-2.

“Mental Illness.” (2022) National Institute of Mental Health. U.S. Department of Health and Human Services.