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# NATURE AS A THERAPEUTIC SOURCE: AN ECOLOGICAL STUDY OF PETER WOHLLEBEN'S THE HIDDEN LIFE OF TREES

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**Abstract**
The current research focuses on the ecological perspective of nature as a therapeutic source, as reflected in Peter Wohlleben's The Hidden Life of Trees. The model of natural well-being holds a prominent position in providing therapeutic comfort for those who need a safe zone or are in dire need to escape from the desperate routine of daily life. However, it has multiple reflective positions, but the study aims to examine how the ecological principles outlined in Kathy Willis' Good Nature, particularly her model of natural well-being, has been applied to the therapeutic benefits of humans for their mental health interventions and improve their quality of life through nature. Therefore, nature is beyond all therapies which is employed in the research. The researcher has applied the model on Peter Wohlleben's The Hidden Life of Trees (2015) and found that the trees and plants can facilitate healing and emotional growth in humans. The research findings highlight the therapeutic position of nature, diversified and easy to approach as forest bathing, horticultural therapy, visual plant exposure, aromatherapy with plants, nature soundscape, and tree-hugging.

**Keywords:** Nature, Therapy, Well-being, Good Nature, Mental health, forest bathing

## Introduction

Since ancient times, when people lived in communities in nature, the idea of doing therapeutic and transforming labor in nature has existed. Back then, shamans would use the healing properties of nature to perform rituals and integrate them into the broader framework of traditional medicine. These rituals were used to help people recover from illness, deal with the unknown, and transition from one status to another (Eliade, 1959; Evans, 1997; Hazan, 1992; Jennings, 1995; Meged, 1998; Turner, 1986). They can be considered an ancient form of therapy (Al-Krena, 1999; Grainer, 1995; Jennings, 1995; Jerome, 1993; Jones, 1996; Pendzik, 1994; West, 2004). One of Freud's most prominent students and a significant theorist in his own right, Erickson, used the experiential encounter with nature for his own self and his clients' healing following the scientific revolution and the emergence of modern therapy. He would send his clients to the mountains as part of the process (Kinder, 2002). Working outside with children and people who struggled with authority and limits led to the development of adventure therapy year's later (Garst, Scheider, & Baker, 2001; Kaly & Hessacker, 2003; Neill & Heubeck, 1998; Price & DeBever, 1998; Simpson & Gillis, 1998). Additionally, it was utilised to care for families, anorexic women, children with special needs, and individuals with

mental illnesses (Bandoroff, 2003; Burg, 2001; Crisp & O'Donnell, 1998; Richards, Peel, Smith, & Owen, 2001; Roberts, Horwood, Aunger, & Wong, 1998).

This mindset is reflected in the emerging social-therapeutic-environmental philosophy of eco-psychology, which holds that a return to nature is crucial for people's happiness and well-being as well as for the preservation of the physical world (habitats, animals, plants, landscapes, and cultures) (Roszak, 2001; Roszak et al., 1995; Totton, 2003). Numerous authors (Abram, 1996; Berger, 2004; Beringer & Martin, 2003; Davis, 1998; Naor, 1999; Roszak, 2001; Totton, 2003) have written on the healing benefits of nature and being in nature. Few have attempted to reassemble the insights gleaned from intuition and practice into a therapeutic framework that uses the therapeutic interaction as the primary point of reference.

A treatment known as *"nature-based therapy*" makes use of the natural surroundings to help the therapeutic process forward (Corazon et al., 2010). Horticulture-based activities, being in natural settings, and participating in nature-related crafts or green exercise are all components of nature-based therapy, also known as green care, nature-assisted therapy, nature therapy, or animal-assisted therapy (Annerstedt and Währborg, 2011; Fieldhouse and Sempik, 2014; Lee et al., 2012). The following meaning and advantages of nature-based occupations have been explained by earlier occupational therapy literature: improved well-being, identity, social connectedness or belongingness, connection to nature, and a sense of challenge and accomplishment (Feighan and Roberts, 2017; Jeffery and Wilson, 2017; Wensley and Slade, 2012).

Theoretical foundations of occupational therapy and nature-based treatment include the therapeutic use of occupation, or occupation-based therapy, and the therapeutic use of the environment (Jeffery and Wilson, 2017). Occupational therapists can include nature-based activities into their therapy thanks to this synergy (Jeffery and Wilson, 2017). It has been demonstrated that nature-based treatments improve various patient cohorts' psychological, physical, and social well-being (Annerstedt and Währborg, 2011). The potential of nature-based treatments as a public health resource is demonstrated by the variety of the populations in the analyzed research (Annerstedt and Währborg, 2011).

Occupational therapists can use this supporting research to promote their advocacy for the public to have access to chances for purposeful activity in a range of natural settings (Genter et al., 2015; Wensley and Slade, 2012). It must be recognized, therefore, that the current environmental disaster is partly a result of human occupancy. According to Ung et al. (2020), it is also the path to sustainability. According to Dieterle (2020), an occupational lens provides insight into how some occupational habits have a detrimental influence on the environment, which in turn constitutes a danger to world health. Many health-promoting strategies, including Ireland 2040 (Department of Health, 2013; Government of Ireland, 2020) and Healthy Ireland (Department of Health, 2013), acknowledge the influence of the environment on health. Through a position statement on global climate change and a list of guiding principles for the profession, the World Federation of Occupational Therapists (2012, 2018) highlights the role of occupational therapy in fostering sustainability within practice.

Practitioners and decision-makers have made it apparent that ecosystem service evaluations and policy should take into account the new data on the benefits of nature experiences for mental health. Here, we refer to the benefits of spending time in nature for mental health as "*psychological ecosystem services*." We start with a summary of the body of evidence and end with declarations of consensus that represent our common understanding. We then offer a conceptual model for the benefits of nature exposure on mental health based on this basis.

More than half the population of the world is living in cities, and gradually this percentage is rising. Rural areas are transforming into urban areas. Urban life has given us modern technology and progress; it has also had a negative impact on modern people. People living in cities are psychologically disturbed. Their mental health is badly affected by stress, anxiety, depression, pollution, violation, and social isolation. According to the World Health Organization, these factors will account for 15% of DALYs by 2030 (Dye, 2008). Anxiety and depression are the most frequent mental health conditions that are affecting the young generation. According to Hunt et al. and Peen et al., people who are living in cities experience 39% more mental disorders and 21% more depression than their rural counterparts. According to Kellert S.R. (2002), exposure to natural settings and closeness with nature can reduce psychological illness. Kathy Willis's *Good Nature: Why Seeing, Smelling, Hearing, and Touching Is Good for Health (2024)* offer a profound exploration of connection with nature that is very beneficial for improving human health. Its goal enhances our perception of how physically and psychologically affected we are by nature and also explore some of the best ways to interact with natural elements for human health benefits. Kathy (2024) discusses human response towards plants by focusing on three senses, i.e., sight, hearing, and smell. Good nature also delves into the relationships within ecosystems, though her focus leans more on broader ecological systems and the human connection to them. *The hidden life of trees*, Peter Wohlleben (2015) shares his views and experiments from his work. He suggests that trees are also living beings, as they can communicate, they can learn, they have a language, and they have consciousness. They also have an underground network system and form a complex ecosystem. This work conveys more scientific and experimental understanding of trees emotional lives. By applying the *model of Kathy Willis(2024)* on *The Hidden Life of Trees (2015)* we can analyze how nature heals depression, anxiety, hysteria, and psych patients—implemented along with medications through nature—and how greenery affects our minds and thoughts. In essence, *The Hidden Life of Trees (2015)* offers a profound exploration of the natural world through the lens of Kathy Willis, presenting a narrative that both exposes the appreciation of the natural world and advocates for a deeper understanding and reverence of the natural world.

## 1.1 Research Statement

This study aims to examine how the ecological principles outlined in Kathy Willis' *Good Nature*, particularly her model of natural well-being, can be applied to the therapeutic benefits of humans for their mental health interventions and improve their quality of life through nature. The researcher has applied the model on Peter Wohlleben's *The Hidden life of Trees (2015)* and narrates that the trees and plants, as explained by Peter Wohlleben, can facilitate healing and emotional growth in humans.

## 1.2 Research Objectives

1. To understand the psychological and physical effects of spending time in green areas on stress reduction and overall well-being as narrated in *The Hidden life of Trees* by Peter Wohlleben

2. To explore the alignment in therapeutic outcomes between traditional Eco therapy practices and *'Ecological model of Wellness'* by Kathy Willis in the particular text

3. To suggest some Eco system service management strategies and modern techniques of therapy works together for human well-being

## Research Questions

1. Why spending time in green areas affect psychological and physical health, stress reduction and overall well-being with respect to *The Hidden Life of Trees* by Peter Wohlleben?
2. How therapeutic outcomes between traditional Eco therapy practices and *'Ecological model of Wellness'* by Kathy Willis aligned with in the particular text?
3. In what ways Eco system service management strategies and modern techniques of therapy works together for human well-being?

**Theoretical framework**

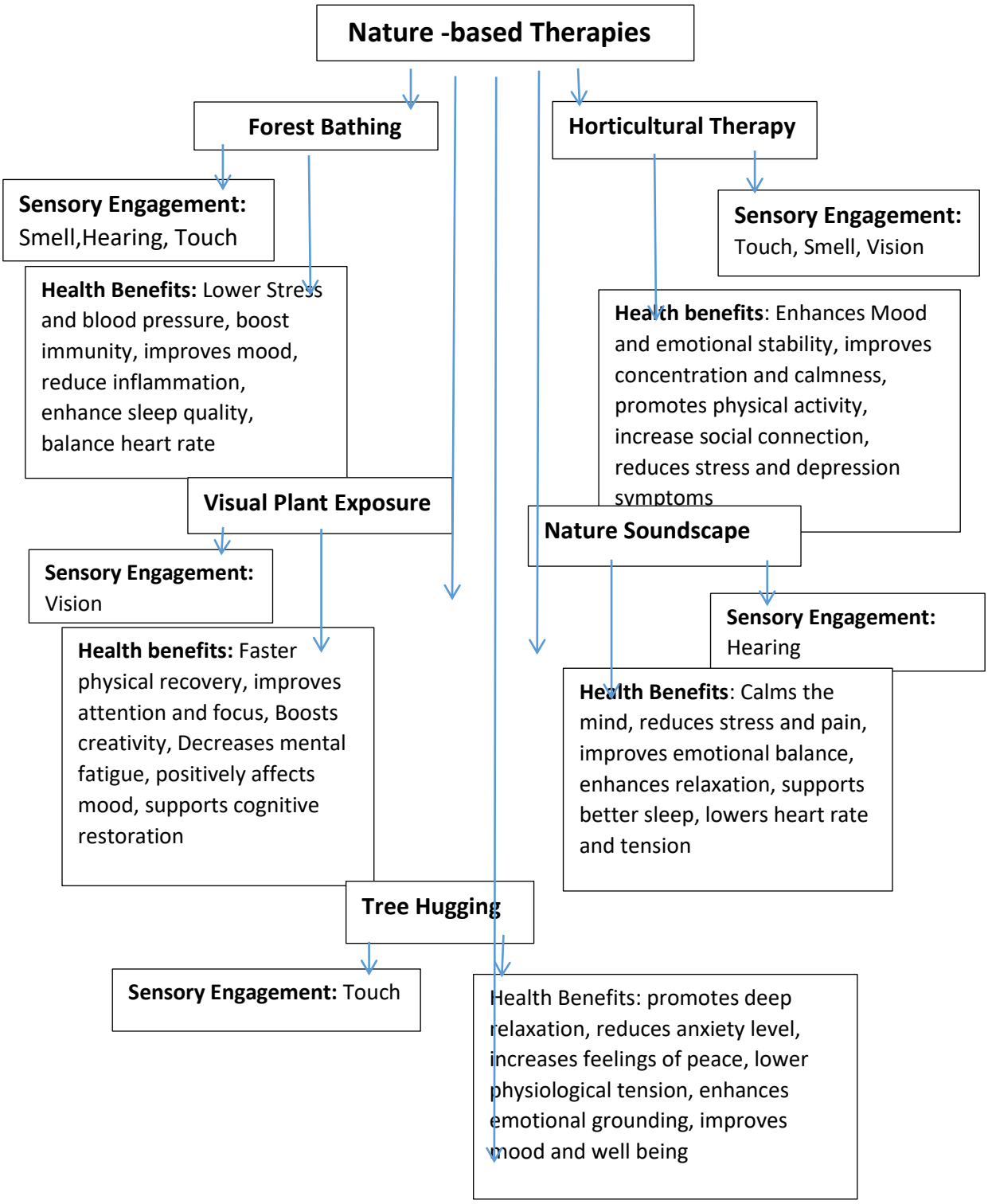
The theoretical framework for the study, applying the Model of Kathy Willis (2024) to *The Hidden Life of Trees* (2015), is designed to investigate psychological problems and their medication through nature. This model would serve as a conceptual representation of the Good Nature (2024) by Kathy Willis, capturing the interconnection, mindfulness, and responsibility humans share with the natural world.

*Good Nature (2024),* developed by Kathy Willis, offers insights into how nature improves human health, especially psychologically. She did various experiments on patients. She proves that patients who saw trees from their room windows can heal faster than those who have blank windows. This shows the connection between the human mind and nature. Through touching, smelling, and hearing nature, humans feel better and become healthier, and it examines how our senses provide access to the natural world and how nature has positive outcomes on humans' mental and physical worlds.

Kathy Willis' model (2024) emphasizes the therapeutic and healing power of nature. Willis (2015) explores the idea that nature that promotes well-being, emotional resilience, and personal growth. Her model integrates ecological, psychological, and philosophical elements to argue that humans are inherently connected to nature and that this relationship is essential for physical and psychological health. This theoretical framework compliments the analysis of how nature heals human mental health, how plants change our thoughts, how spending time in nature reduces stress and anxiety, and how it can provide a sense of tranquility and mental clarity.

Kathy willis (2024) did various experiment through nature therapies. The first experiment is on patients, Kathy willis (2024) concluded that patients who had a greenery view from their side window recovered faster than those who faced a blank wall. The second experiment is on students, students who looked at a green roof performed better than those viewing concrete side. The third experiment is on office worker, pink flowers on desk helped them feel calmer within minutes. Smelling natural scents i -e cypress, pine, juniper reduced heart rate and stress level. Listening to natural sounds like rustling leaves eased stress, fast recovery, and promoted mental health relaxation compared to urban and hospital noise. Kathy willis (2024) did experiments on children, touching soil improved the body microbiome and improves body immunity and touching wood helps lower blood pressure and make mood better.

Some of the effects on our nearly metaphysical senses, including as sight, hearing, touch, and scent, are supported by scientific and medical evidence in Good Nature. This is not the same strategy as wearing a crystal around your neck or taking an herbal medication. It involves determining the precise nature of the relationship between humans and the environment as well as if there is consistent empirical evidence that the natural environment affects our well-being. Finding the physiological underpinnings of our responses—such as brain activity, blood pressure, fMRI, heart rate, stress hormone levels, cell counts, and microbiota is the aim.




**Nature as a Source of Healing Power and a Social Mobiliser**

Wohlleben details his personal lessons learnt from overseeing a forest in Germany's Eifel Mountains, including the amazing language of trees and how groundbreaking arboreal research conducted by scientists worldwide demonstrates *"the role forests play in making our world the kind of place where we want to live"* (Wohlleben XII). As our understanding of nonhuman consciousness's is still developing, Wohlleben's revelatory reinterpretation of our earliest companions offers us a fresh perspective on what we have long taken for granted and, in doing so, a greater sense of compassion for these amazing creatures that not only make life on this

planet we call home infinitely more enjoyable, but also possible to provide a healing power to society.

Wohlleben's own career, however, started at the other extreme of the caregiving continuum. He acknowledged that he "understood about as much about the hidden life of trees as a butcher knows about the emotional lives of animals" (Ibid XIII), in his capacity as a forester entrusted with maximizing the forest's production for the timber business. (Ibid., XIII). He saw firsthand the results of turning everything living, whether it is a species or a piece of art, into a commodity; his job's emphasis on commerce distorted his perception of trees.

Everything changed around 20 years ago when he started giving tourists log-cabin tours and survival instruction in his forest to entertain them from the good nature. His youthful love of nature was reignited as their charmed curiosity revived his own as they marveled at the magnificent trees. At about the same time, researchers started working in his forest. He was able to perceive trees as the precious living beauties that they are, rather than as a kind of money, and soon every day was infused with awe and the excitement of discovery. He narrates: forester life started to get fascinating again (Ibid, XIV). In the forest, each day was an opportunity for exploration. “This inspired me to manage the forest in novel ways. You can no longer just cut down trees and ruin their lives with big machinery if you realise that they have memories, feel sorrow, and have parents who live with their offspring. (Ibid., XIV).

It demonstrates how everyone is drawn to the tranquil beauty of nature, even while the environment itself harbors certain memories and sadness. These memories are directly related to human existence, which is the source of the painful dilemma. Nature, on the other hand, has the ability to heal; therefore it may be used as a form of treatment for those who are in pain.

He also had flashes of insight, the most startling of which occurred on one of his many strolls through a stand of ancient beech trees in his woodland. He was immediately struck with a fresh sense of the oddity of a patch of weird mossy stones that he had seen several times before. He made the startling discovery that the stones had an odd shape—they were softly curved with hollowed-out areas—when he knelt down to inspect them. I carefully removed one of the stones' mosses. I discovered tree bark beneath. Therefore, these were actually ancient wood rather than stones. Given that beech wood on moist ground often decomposes in a matter of years, I was quite aback by how firm the "stone" was. The fact that I was unable to raise the wood, however, shocked me the most. Clearly, it was fastened to the earth somehow. I slowly scraped away some of the bark with my pocketknife until I reached a greenish layer. Green Chlorophyll is the sole substance that gives fresh leaves this color; existing plants' trunks also hold reserves of chlorophyll. There was only one possible interpretation: this piece of wood was still alive! Suddenly, I saw that the remaining "stones" were arranged in a circle that was around five feet in diameter, creating a clear pattern. What I had discovered were the twisted remnants of a massive old tree trunk. The remnants of the outermost margin were all that remained. The tree must have been fallen at least four or five hundred years ago because the inside had long since decomposed totally into humus.

How is it possible that a tree that was felled millennia ago is still alive? A tree cannot accomplish photosynthesis—the process by which it transforms sunlight into sugar for sustenance—without leaves. For hundreds of years, the old tree was obviously getting nutrients in another way. (Ibid., 1-2).

Here the writer is provide evidences from the nature which holds healing power and certain glimpses of the nature can be opted as therapy for human being to cure them. This practice is attracting the audience to nature to fell at safest position to get in the modes of healing power as the antidepressant is providing to the mentally sick people.

Further, an interesting area of scientific study lied beneath the riddle, one that would later show that this tree's aided living was not unique. Researchers discovered that nearby trees support one another through their root systems, either directly by entwining their roots or indirectly by developing fungal networks around the roots that act as a kind of long-distance neurological system linking different plants. These arboreal mutuality's are even more intricate—trees seem to be able to differentiate their own roots from those of other species and even of their own relatives, as if this were not amazing enough. (Ibid, 2). Wohlleben actually operates the sociological perspective on nature, how different plants and trees are connected to one other in network, forming strong bondage. This aspect of the nature can be more applicable to human life to make stronger their whims of love and care for one other. Thus, the nature holds it making over power of healing and therapy to fascinate the common audience.

Further, Wohlleben considers this incredible tree sociality, full of insightful observations on what constitutes robust human societies and communities as he noted in detail: what makes trees such gregarious creatures? Why do they share food with members of their own species and occasionally even feed their rivals? The same justifications apply to human communities: cooperation has benefits. A forest is not a tree. A tree cannot provide a stable local climate by itself. It is dependent on the weather and wind. However, a large number of trees work together to form an ecosystem that produces a lot of humidity, stores a lot of water, and moderates extremes of heat and cold (3). These mutual stances of tree, having multiple fruitful practices to benefit one other, this beneficial stance is not only applicable on the nature itself but this good nature also provides a handy life to the human life and a healthy society is the outcome of such practices as shown in the text.

Additionally, trees may live for a very long time in this protected habitat. The community has to stay together through everything to reach this stage. Few trees would ever live to old age if they were all simply concerned with themselves. Frequent deaths would leave numerous huge holes in the tree canopy, allowing storms to more easily enter the forest and uproot additional trees. The forest floor would get dry when the summer heat reached it. All the trees would be harmed.

Therefore, each tree is important to the community and should be preserved for as long as feasible. For this reason, even those who are ill are cared for and supported until they get better. Maybe it will be the opposite next time, with the supporting tree being the one that needs help. (Ibid., 3–4)

The strength of the surrounding forest determines how powerful a tree may be. Because of the varied timescales on which our individual lives unfold, one cannot help but question if trees are so much more adept at this reciprocal care than humans are. Does our biological shortsightedness contribute to our incapacity to see this larger picture of shared subsistence in human communities? Is it possible for species with varying time scales to behave more in line with this larger scheme of things in a highly linked universe?

Although they extend their kinship to differing degrees, trees do discriminate in their kinship. According to Wohlleben, there are many tiers of membership, but all trees are part of this society. For instance, the majority of stumps rota way into humus and vanish after a few hundred years, which is a short time for a tree. Over the centuries, only few people are preserved. What makes a difference? Like human communities, do tree societies also have second-class citizens? Although the concept of "class" does not fully fit, it appears that they do. How helpful a tree's coworkers are depends more on their level of relationship, or perhaps even fondness. (Ibid. 4)

Wohlleben notes that the forest canopy encodes these linkages, making them accessible to anybody who just looks up:

The typical tree spreads its branches until they meet those of a nearby tree that is the same height. Since there is already greater light and air in this area, it does not get much broader. But you get the sense that there is a real pushing battle going on up there because it strongly strengthens the branches it has stretched. True friends, however, take care from the beginning to avoid putting too much emphasis on one another. The trees only grow strong branches at the outside margins of their crowns, or in the direction of "non-friends," since they do not want to take anything away from one another. These lovers frequently have such a strong bond that they occasionally even pass away together. However, interactions between trees and the rest of the ecosystem are not isolated. In actuality, they frequently discuss and even address other species in their communications. Wohlleben explains their olfactory warning system, which is very impressive:

Scientists discovered something on the African savannah forty years ago. The plants were not pleased that the giraffes were eating umbrella thorn acacias. To get rid of the big herbivores, the acacias just needed a few minutes to begin releasing poisonous chemicals into their leaves. After receiving the message, the giraffes proceeded to other trees in the close by. Did they, however, proceed to nearby trees? No, they simply strolled past a few trees for the time being and did not start eating again until they were approximately 100 yards away.

This behavior's cause is astounding. Nearby trees of the same kind were alerted to the impending problem by the warning gas (ethylene) released by the acacia trees that were being consumed. All of the trees that had been informed immediately prepared by pumping poisons into their leaves. Being aware of this trick, the giraffes walked farther away to a section of the savannah where they could locate trees that were unaware of the activity. If not, they went upwind. If the animals travelled upwind, they may discover neighboring acacias that were unaware of the giraffes' presence since the scent signals are transported to nearby trees by the breeze.

Trees function much more slowly than humans because they follow time scales that are far longer than our own; their electrical impulses move at a third of an inch each minute. According to Wohlleben, as soon as a creature begins to nibble on oaks, spruce, or benches, they all begin to feel pain. The tissue surrounding the location of injury changes when a caterpillar bites into a leaf. Furthermore, the leaf tissue emits electrical impulses in the same way as injured human tissue does. The plant signal, however, moves at a sluggish pace of a third of an inch per minute rather than the milliseconds that human signals do. As a result, it takes around an hour for defense chemicals to get to the leaves and ruin the pest's food. Even when they are in peril, trees choose to live their lives in the slow lane. However, this modest pace does not imply that a tree is not aware of what is occurring in other areas of its structure. Scent chemicals may be released by the leaves if the roots are having problems since this information is disseminated throughout the tree. And fragrance compounds that are specially tailored for the purpose at hand, not just any old scent compounds. (Ibid., 7-8)

The benefit of this slowness is that it eliminates the need for general alarmism since trees' natural slowness is compensated for by a signal that is extremely precise. They utilize taste in addition to scent; each species has a unique type of "saliva," which may be mixed with various pheromones that are intended to repel a particular predator.

Wohlleben uses a tale about Yellowstone National Park to highlight the importance of trees in the ecosystem and show how "our respect for trees impacts the way we interact with the environment around us": The wolves are where it all begins. In the 1920s, wolves vanished

from Yellowstone, the first national park in history. The environment as a whole altered when they went. The park's elk herds grew in size and started eating the cottonwoods, willows, and aspens that bordered the streams. Animals that relied on the trees survived, but the vegetation dwindled. For seventy years, there were no wolves. The elks had finished their lazy browsing days by the time they returned. The trees grew back and browsing decreased as the wolf groups kept the cattle moving. Once more, stream banks were stabilized and water flow was delayed by the roots of cottonwoods and willows. Consequently, this made room for creatures like beavers to reappear. Now these hard-working builders had access to the supplies they required to build their lodges and provide for their families. Additionally, the animals that relied on the riparian meadows returned. The trees were able to thrive and develop their impact on the environment because the wolves were better stewards of the land than humans.

Regional ecosystems are not the only examples of this interdependence. Wohlleben references the research of Japanese marine chemist Katsuhiko Matsunaga, who found that trees that fall into a river can alter the water's acidity and encourage the growth of plankton, the most important and fundamental component of the entire food chain that is necessary for our own survival.

Wohlleben continues to examine intriguing facets of arboreal communication in the remaining sections of The Hidden Life of Trees, including how trees transmit knowledge to the following generation through their seeds, what gives them their long lifespans, and how forests respond to newcomers. This fantastic illustrated atlas of the most unusual trees in the world and an 800-year visual history of trees as symbolic diagrams are great additions to it.

The section is foremost and detailed elaboration of how trees play important role to alive other plants and trees, metaphorically Wohlleben approaches human life which impacts societal bondage. However, societal bondage is linked with the life of connectedness of the tree chart which not reflect beauty but the life span of trees are full of human connectedness which is impacted by the healing power of the nature at the same time as well. Further, this stance is the reflection of a good nature as well and how the eco theraphic perspective entertains the human life to develop and maintain human life and human health. Therefore, the stance of well-being and health is connected with healing power of the nature, and this stance is a therapy for the entire society and the nature plays its role as social mobilizer.

**The Healing Power of Ecosystem Services and Eco Therapy**

Nurgul Arisoy's "The *Healing Power of Eco system and Services and Eco therapy*" (2023) that focuses on the relationship between human life and nature— particularly how nature plays a positive role in healing and providing therapy for the human mind. According to Arisoy (2023) that activities that enhance the efficacy of eco therapy include gardening, wilderness therapy, forest bathing, animal-assisted therapy, and outdoor yoga and meditation in natural settings. By using these techniques, people may develop a stronger bond with both nature and oneself, which enhances their general wellbeing and mental health. While wilderness therapy uses outdoor activities to enhance personal growth and self-awareness, gardening encourages a feeling of purpose and connection to nature. While animal-assisted therapy fosters calm and connection, forest bathing lowers stress and elevates happiness. Yoga and meditation outside in natural environments encourage self-awareness, relaxation, and stress reduction. (Van den Berg & Custers, 2011; Fine, 2015; Annerstedt et al., 2013; Sobo et al., 2016; Soga et al., 2017; Tsunetsugu et al., 2017; Priest & Marsden, 2018; Laudenslager et al., 2018; Gonzalez et al., 2018; Bandoroff et al., 2019; Ochiai et al., 2019) Utilising these ecotherapy techniques allows people to benefit from nature's healing properties.

A potential strategy that acknowledges the interconnectedness of human well-being and the environment is the incorporation of eco therapy into ecosystem service management. In environmental management and policy, ecosystem services—which include the advantages that ecosystems offer to society—have drawn more and more attention (Millennium Ecosystem Assessment, 2005). These services include supporting services like soil formation and nutrient cycling, regulating services like flood management and climate regulation, provisioning services like food and water, and cultural services like recreational and aesthetic values (TEEB, 2010). In order to guarantee the continuous provision of these services, ecosystem service management has historically concentrated on the preservation and sustainable use of natural resources.

However, by acknowledging nature's capacity to enhance human health and well-being, eco therapy's integration into ecosystem service management broadens the scope (Bowler et al., 2010). As a nature-based therapeutic method, eco therapy makes use of the natural environment's healing properties to enhance mental, emotional, and physical well-being (Hansen et al., 2017). Eco therapy enhances human well-being by giving people the chance to spend time in nature, participate in outdoor activities, and benefit from the healing properties of natural environments (Cheng et al., 2020).

There are several advantages to incorporating eco therapy into ecosystem service management. First of all, it emphasizes how crucial ecosystem restoration and maintenance are to the welfare of both people and the natural world. Decision-makers and stakeholders are motivated to give conservation and sustainable management of ecosystems top priority when they acknowledge the health benefits of nature, which guarantees the ongoing provision of ecosystem services (Hartig et al., 2014). Furthermore, including eco therapy into ecosystem service management can result in more inclusive and comprehensive methods that take into account both ecological and human factors. The following are some strategies used to include eco therapy into ecosystem service management:

Planning for natural areas is the initial strategy. Natural spaces must be prepared for eco therapy activities in order for eco therapy to be implemented successfully. According to this method, parks, gardens, green spaces, and outdoor rehabilitation facilities must be planned as appropriate places for people to engage with nature.

The second strategy is therapeutic landscape design, which carefully organizes the surroundings to maximize the restorative benefits of both man-made and natural characteristics. By carefully choosing and arranging water features, plants, gardens, seating places, walking trails, and meditation areas, this method produces a healing setting that encourages rest, reflection, and emotional health. Recognizing the impact of the physical surroundings on healing experiences, therapeutic landscape design seeks to establish areas that promote peace and healing.

Activities centered on nature therapy represent the third strategy. This method aims to utilize nature's healing potential and promotes engagement with the natural world. In order to help people connect with nature and experience its healing benefits, it uses nature-based therapy activities like horticultural therapy, nature walks, forest therapy, crafts made from natural materials, animal-assisted therapy, and outdoor meditation.

Building awareness and educating people is the fourth strategy. Building awareness and educating people are crucial to incorporating eco therapy into ecosystem service management. The goal of this strategy is to assist communities in realizing the advantages of the natural world and the possibilities of eco therapy. Seminars, educational initiatives, public awareness and support for eco therapy may be increased through campaigns and educational resources.

Partnership and cooperation are the sixth strategy. This strategy makes it easier for many stakeholders to come together in order to accomplish shared objectives. Eco therapy and ecosystem service management work together when stakeholders including the government, local government, healthcare organizations, conservation organizations, therapy professionals, educational institutions, and community representatives work together. Knowledge exchange, resource pooling, and the creation of cooperative initiatives among stakeholders are ways to accomplish integration.

These methods facilitate a deeper comprehension of the values and advantages connected to natural habitats by allowing the examination of the psychological and emotional ties that exist between people and the natural world (O'Brien et al., 2010).

Recognizing the intrinsic link between human well-being and the natural environment and integrating nature-based therapeutic treatments within the framework of ecosystem management are key components of integrating eco therapy with ecosystem services. Implementing nature-based therapies and creating therapeutic settings that offer chances for eco therapy activities are two ways to accomplish this integration. Eco therapy's integration with ecosystem services is further improved by encouraging stakeholder participation and environmental conservation. To evaluate the success of nature-based therapies and guide decision-making, ongoing study and observation are essential. One viable strategy for attaining sustainable development and advancing human well-being is the incorporation of eco therapy into ecosystem service management. Ecosystem service management may expand to include the whole range of human well-being by recognizing the potential of nature to improve mental, emotional, and physical health and using nature-based therapy methods. In addition to fostering a greater understanding of the numerous advantages that nature provides to people and society as a whole, this integration may make it easier to conserve and manage ecosystems sustainably. By integrating these components, eco therapy and ecosystem service management promote a deeper understanding of the many advantages that nature offers to people and communities in addition to helping to preserve and sustainably use ecosystem services.

An important strategy that recognizes the mutually reinforcing link between human well-being and the natural environment is the incorporation of eco therapy into ecosystem service management. Eco therapy encourages the improvement of mental, emotional, and physical health by acknowledging the healing powers of nature and using nature-based therapies including gardening, wilderness therapy, forest bathing, and animal-assisted therapy. By highlighting the significance of including human elements and the preservation and restoration of ecosystems for the benefit of both people and the environment, this integration broadens the scope of ecosystem service management. Integrating eco therapy into ecosystem service management can support sustainable ecosystem management and conservation while advancing inclusive and holistic approaches to human well-being by deepening understanding of the values and advantages of natural environments.

The reciprocal link between ecosystem services and eco therapy is emphasized in this section's conclusion, along with the advantages of combining these ideas. We can create novel interventions that simultaneously improve human health and well-being and encourage the preservation and sustainable use of our natural environment by acknowledging the therapeutic potential of nature and integrating eco therapy concepts into ecosystem service management plans. For this integration to be as effective as possible and to influence decision-making processes, nature-based interventions must be continuously researched, observed, and evaluated. Eco therapy and ecosystem service management can be better integrated if their effects are continuously evaluated. In the end, embracing natures healing power can help us to build a more sustainable and equitable future for the environment and for people.

**Survey**

The survey included 50 respondents, belong to different professional areas i-e Doctors, lawyers, students, social media managers, teachers. Only 33.3% people often spend their time in nature, a few times a month.61.1% people experienced anxiety in past 6 months, 44.4% population is suffering from depression, 50% people are facing sleep problems. Additionally,22.2% people are connected to nature in urban areas.With 78.8% people think that nature improves mental health. Only 22.2% people used nature -based therapy (tree hugging, forest bathing etc), 77.8% people never used. Only 8% participents reported no noticeable change in their emotional state after engaging with nature based therapy.

## Conclusion

"*The Hidden Life of Trees"* is about as the writer has worked for decades managing nature preserves and other environmental concerns as a naturalist with training in botany and water quality. He evaluated a lot of books that promise to give the inside scoop on what nature is actually like, and it has seen certain common themes. If there is an applecart to spill and a "*Other*" to despise, a book will be more interesting. In this instance, the "*Others*" to be despised are commercial foresters and narrow-minded scientists, while the apple cart represents outdated perspectives on trees. Letting the reader off the hook by implying that we as individuals do not need to devote any energy to make up for all the ways that human activity has upset the natural equilibrium is another typical tactic.

Since almost all of these books are authored and vetted by non-scientists, the public is not shielded from any false information they could include. The Hidden Life of Trees seems to be a patchwork of admirable feelings and embarrassing anthropomorphism, reality and enticing fantasy, lovely descriptions and grotesque generalization, even if it is shared about the author's sense of admiration and surprise for all that trees accomplish. Both well-informed and poorly-informed readers will go. The book was described as a collection of half-truths, biased opinions, and wishful thinking culled from extremely selected and unrepresentative sources of information by two German scientists who launched a petition challenging its assertions.

Wohlleben's support of old growth forests speaks to our need for a haven of security and tranquilly in a world that is changing drastically, aiming to provide a therapy for human in a good provided nature. The argument for allowing trees to grow more slowly and live longer is compelling because of the dire need of the human. If you read the book, you will see that he makes very little expectations of us in terms of deliberate effort to restore nature, despite his goal of "*old woods free from any human intrusion*." Restoration is not even mentioned in the index. It appears to occur naturally over hundreds of years, and "*no actual sacrifices need to be made*."

Understanding that trees are the enemy to many smaller species that cannot withstand shadow must coexist with a genuine appreciation of trees but still hold a very prominent place for humanity because of good nature and providing therapy to humanity. He frequently refers to deep, uninterrupted forests as the ultimate goal, although acknowledging that under *"deep shadow, wildflowers and shrubs do not have a chance...,"* and that pollinating insects find little food in forests dominated by species with wind-pollinated blooms. In addition to forests, any discussion of biodiversity must include habitat for grasslands, savannas, and shrubs. While preserving old growth forests is vital, the amount of tree-dominated conserved open space in central New Jersey and other eastern states is too uniform to support other necessary ecosystems.

Wohlleben makes generalizations about forests in this passage. Trees in a forest have an incentive to cooperate, even to the extent of feeding their rivals through intertwined roots, since they profit from the "*consistent local environment*" they produce. As someone who typically believes in the value of collaboration and group efforts, I can definitely relate to his description of forests as "*superorganisms with linkages much like ant colonies*." However, the author used a false account of coming across an ancient tree stump in the forest that was being preserved by the surrounding trees as proof. Do the younger trees honor their elders in this way? You could think that is remarkable, but only if you know that the trees and stump he is referring to are beeches. The elder and younger trees he portrays are neither distinct tree, nor are they "*friends*" as he subsequently refers to them, because beeches produce clones.

In actuality, they are a single tree with several trunks joined below ground by a root system that grows new stems as it expands. He commits a serious sin of omission by failing to bring this to light. *"Every tree, therefore, is useful to the community and worth maintaining around for as long as possible."* Wohlleben goes too far in his statement, but I am not aware of any forests on the planet where this is true. Not in the Ponderosa pine forests of the northwest, where proper tree spacing is necessary to prevent wildfires from jumping up into the crowns, or the fire-dependent pine forests of the southeast, where pines would be quickly shaded out if hardwood trees were not kept at bay by periodic fire. Not in central New Jersey's numerous second growth hardwood woods, which are choked with stunted trees. According to the author, canopy openings are the adversary. He claims that the heat from the sun will deplete the humus in the soil. The nearby trees will be blown down by the wind. There may be some validity to the idea that our woods are more susceptible to wind, but only shade-tolerant tree species will be able to grow again if sunlight never reaches the ground. Forests come in a variety of forms, some of which benefit from sporadic disturbances like fire. He provides a helpful description of several types of woods on page 208, but he frequently portrays his oak and beech woodland as somehow universal.

The astounding diversity of nature is one thing that confounds those who wish to learn more about it. Although the lengthy learning curve might be daunting, they have heard that variety is a positive thing. Wohlleben circumvents this by making generalizations about the ostensibly small number of tree species in his forest. Although it appears that he only knows of two primary kinds of deciduous trees, oaks and beech, he frequently describes them as though they were typical of all deciduous trees worldwide. By using this method and describing trees as though they were like humans who "*plan*," "*agree*," and "*go for it,"* he is able to reduce nature and make it appear familiar and easily understandable.

"*When beeches and oaks put blooming on wait for a number of years, this has terrible effects for insects as well--especially for bees,"* he says at the beginning of certain paragraphs. Bees do not use beeches and oaks very often since they are wind-pollinated, as anyone familiar with tree pollination will know. He ultimately explains this after leaving the reader to imagine starving bees dropping out of the sky because there is not enough pollen.

In the Love chapter, he describes girdling trees as "*brutal*," but in the preceding chapter, he describes beeches and oaks cooperating to starve pregnant deer and boar to lower their population. This has a hint of humor. That is, some hard love. The author added the fact that genetically isolated groups have a tendency to eventually become extinct as an indication of happiness. In order to bridge the gap between otherwise isolated populations, I take seeds from isolated populations of a species and plant them in other favorable areas throughout the town. This is some of my more rewarding job. Genetic diversity may be lost in stands of uncommon tree species that are totally isolated, with only a few trees growing. When they do, they become weaker and eventually go extinct after a few centuries.

Wohlleben attempts to disprove the notion that carbon absorbed by trees during their existence is only returned to the atmosphere after they pass away. It may be disheartening to realize that trees cannot stop climate change. Determining the best way to trap carbon in plants and soil is a crucial topic because it has the ability to lessen the damage we are bringing to the earth. Unfortunately, there are a number of alluring fictions in this chapter. To begin with, he contends that a dead tree trunk is *"worked, by fractions of inches, deeper profoundly into the earth*" and "*gnawed and munched*." The bulk of the CO2 that a tree absorbs, he adds, *"remains locked up in the ecosystem forever*."

As a result, carbon dioxide finds its last resting place in humus, which becomes more concentrated with age and may eventually transform into anthracite or bituminous coal. It becomes cooler the further you go underground. Additionally, life slows down until it nearly stops when the temperature drops.

It is a pretty picture, and it is mostly made up. One is that a tree's continuous breathing releases half of the carbon it fixes from the atmosphere. In the book Healthy Forest Air, the author openly contradicts his prior explanation by acknowledging the tree's necessity for respiration. *"Microscopic organisms, fungus, and bacteria are engaged in a 24-hour feeding frenzy in leaves, dead wood, and other decomposing plant matter, breaking down anything edible and then excreting it as humus. It is not just the trees that are expelling vast volumes of carbon dioxide in the dark*." That "*feeding frenzy*" indicates that those organisms are breathing and converting a large amount of the carbon in the dead wood back into CO2. Additionally, the terminologies are used carelessly. Since carbon dioxide is a gas, it neither *"finds its ultimate resting place*" nor "*sinks into the mud."*

The deeper soil strata are not progressively colder as one descends; rather, they are a 55 degrees is reasonably consistent and warm enough for biological activities.

After explaining that the coal we currently use was generated in primordial conditions that are entirely different from the upland forests where the majority of trees are taken, and over a time span that is worthless for our situation, he openly accuses commercial logging of preventing coal from being formed. I would be happy to hold commercial logging accountable for a lot of things, but stopping the production of coal is not one of them.

The author's assertion that older trees grow more swiftly than younger ones is soon followed by another lie. For both humans and trees, the idea of continuous growth among the well-aged is alluring. *"Trees with trunks 3 feet in diameter created three times as much biomass as trees that were only half as broad.*" He is trying to upset the applecart of "*scientific beliefs*," and we sympathize with him. However, a tree that has a trunk twice as thick is not twice as huge. Considering that a trunk twice as thick has four times the area in cross section, it is more like four times as huge. Therefore, for any given amount of area occupied in the forest, the younger tree develops quicker.

How do long-lived trees in a forest adjust to a rapidly changing climate? is a helpful topic posed in this chapter. He responds that a species' genetic variety will enable the trees in his forest to withstand abrupt climatic shifts. He cites the lengthy north-south range of beeches that stretches from the Mediterranean to Sweden, as well as a rapid, dramatic cold that took place 14,000 years ago. When some say we need to shift southern plant species northward to adapt to a fast warming globe, I find some common ground with the author, at least when it comes to the latter, having personally pointed out the long north-south ranges of species in the eastern U.S.

Attributing human traits to non-human entities, or anthropomorphism, can be endearing and reassuring. It can facilitate our ability to sympathize with other living beings. However, this

propensity to anthropomorphize has landed many authors in hot water when it comes to invasive species. Immigrant species are not the same as introduced species. Like the other humans they join, immigrants are members of the same species. In contrast, introduced species are more like Martians, a new species that, if they appeared, may just blend in with us and seem charming or they might begin to take over our houses, in which case we would find them less adorable.

Therefore, calling this chapter on imported species "*Immigrants*" deceives readers right away. The author then goes on to discuss some of the common defenses offered by opponents of invasive species, a group I am familiar with because I have evaluated a number of books, opinion pieces, and articles in this area. He makes the unfounded assertion that "*nature is constantly changing*," that "*attempts to conserve particular landscapes"* are pessimistic, and that "*most introduced species pose no threat to native trees*." He also asserts that *"there is always a sufficient number of individuals that can rise to a new challenge*" and that the spread of species by humans is not much different in degree from what has happened naturally.

However, these well-known denialist clichés are accompanied with explanations of the issues brought about by imported species. Although his suggested remedy for certain invasive plant species—planting more trees to shade them out—is not very compelling, at least he acknowledges the difference between native and introduced species and the potential for introduced species to cause serious issues.

The author does have a gift, but it is abused, sacrificing truth to get the desired reaction from his readers. The New York Times praised the author's "*humble narrative style and the book's ability to awaken in readers an intense, childlike curiosity about the workings of the world*."

As seen by this demand for plant rights on page 244, he asserts that he is at the vanguard of the movement, challenging traditional conceptions of nature.

*'The way we treat plants will gradually change as well, even though this point of view has caused a lot of head shaking in the international community. Forests are not primarily timber factories and raw material warehouses, but rather secondary complex habitats for thousands of species. I, for one, welcome the removal of moral barriers between animals and plants once the abilities of vegetative beings are understood, as well as their emotional lives and needs."*

However, it has been witnessed how this advocacy for the rights of individual plants and animals may result in a contemptuous attitude towards the more extensive ecological processes of nature. Wohlleben's ideas may appear forward-thinking, but they can lead us backwards, towards a passive, detached connection with nature—witnesses rather than knowledgeable participants.

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