
*Nurtured by
Nature*

The Science



*“Look after the land and
the land will look after you,
destroy the land and it will
destroy you.”*

Aboriginal proverb

“In every walk with nature one receives far more than he seeks.”

John Muir.

“Nature itself is the best physician”

Hippocrates

Nature

No consensus on definition.

The Oxford language dictionary:

“the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.”

To keep things simple I use this definition, although I will at times refer to ‘wider nature’, in acknowledgement that we humans are also part of nature.

History

Hippocrates - designed a hospital in 357 BC with a garden to help patients heal.

Middle Ages - “monastery cures” included rest and work in a garden.

Modern times - research on the benefits of contact with forests began in the 1980s and 1990s with physiological measurements to track the impact.

Early experiments in Japan found measurable changes in stress hormones following exposure to nature, which in Japan is known as shinrin-yoku and translates to “**forest bathing**”

Nature Deficit

Last Child in the Woods – written in 2005 by Richard Louv, a journalist in San Diego. Coined the term ‘Nature Deficit Disorder’. It referred to children spending less time outdoors resulting in a wide range of behavioural problems.

Until then academic world had failed to consider how our reduced contact with nature might be affecting us.

Now a very hot topic in the literature, thousands of studies.

All point in one direction: **Nature is not only nice to have, but it’s a have-to-have for physical health and cognitive functioning.**

Restoration

Attention Restoration Theory hypothesises that nature has the capacity to renew attention after exerting mental energy.

Study – all three groups completed attentionally fatiguing tasks, two groups then went for a 40-minute walk – one group in nature and one in the city (final group relaxed for 40-minutes listening to music and reading).

Those in the natural environment group outperformed those in the other two groups and reported the highest “restorativeness” score based on self-report measures.

Stress Reduction

Stress recovery theory - we can evaluate how nature restores us by using physiological indicators such as heart rate, blood pressure, muscle tension and salivary cortisol level.

Study showed (using MRI) that walking in nature for 90 minutes reduced rumination and decreased activity in the amygdala (an area of the brain that responds to threat), while walking in an urban environment did not.

Range of studies have shown that time in nature enhances working memory, restores focused attention, relieves fear and stress, and produces beneficial reductions in heart rate, blood pressure, and cortisol levels.

Hearing natural sounds

Been studied extensively.

Research has shown that exposure to nature sounds can lower cortisol levels, the hormone associated with stress, thereby reducing anxiety, and improving overall mental wellbeing.

As our bodies respond to the sounds, our heart rate decreases, our blood pressure lowers, and muscle tension dissipates, helping us relax and unwind.

Our bodies also respond by releasing endorphins, which are natural mood enhancers.

Green Space

Just having some green space around our home can help protect us from the negative health impacts of stress and particularly stressful life events.

Many studies have shown that those with a high amount of green space around their home are less affected by a stressful life event and report greater perceived mental health than those with little or no green space nearby.

Bluescapes

Blue spaces found to have similar effects to green spaces i.e. improved mood, improved cognition, improved recovery from stress (the light, the soundscapes and the quickly changing patterns all seen as contributing).

Studies have shown that bluescapes might even be more restorative than green spaces and be particularly important for promoting positive social relationships - seems rivers, lakes and the beach are ideal locations for people to spend high quality time with friends and family.

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Phytoncides

Phytoncides are volatile organic compounds (VOCs) or “essential oils” given off by trees and plants to create a field of protection around themselves against harmful bugs, bacteria, and disease. There are thousands of phytoncides.

Inhaling forest phytoncides **shown to** result in antioxidant and anti-inflammatory effects on airways and may also promote brain function by decreasing mental fatigue, inducing relaxation, and improving cognitive performance and mood.

Phytoncides also been **shown to** encourage natural killer (NK) cell activity in the body. These are cancer-fighting proteins that seek out and destroy tumour and virus-ridden cells.

Video clip

→ Why is the gut microbiome important

Microbes

Recent studies have shown that direct exposure to nature, such as living in a rural area, a suburb with more diverse yard vegetation or even a backyard garden, is associated with a healthier gut microbiome i.e. higher microbial diversity and more beneficial gut bacteria.

When researchers analysed the indoor microbiome (via vacuum dust samples) in rural and urban classrooms, they found that urban schools had a higher number of potential pathogens and pro-inflammatory microbes, while rural schools tended to favour beneficial short-chain fatty acid (SCFA) producing microorganisms.

Biodiversity

Growing evidence that the health and diversity of the microbes in the external environment have a big impact on the diversity and health of our gut flora.

Study - two people rubbed their hands with soil and plant-based materials. Skin swabs taken before and after. Exposure increased, at least temporarily, the total number and the diversity of skin microbiota.

Random controlled trial - exposure to playground sand with added microbially diverse soil, led to shifts in both the skin and gut bacterial communities, as well as increases in immunoregulatory biomarkers (compared with exposure to microbially poor sand – the placebo).

Microbiome rewilding

As more biodiverse natural ecosystems harbour more beneficial microbes, and thus a richer pool from which we can assemble a healthy microbiome, rather than treat the symptoms of poor human microbiome health with pills or probiotics, restoration ecologists have proposed a holistic preventive remedy, known as “microbiome rewilding”.

The Lovebug effect

Scientists currently theorising that when the microbiome is lacking in diversity, the chemicals it releases might have an effect on the brain (via the gut brain axis) that manifests as a thirst for nature.

In a biodiverse natural environment a thimble-full of soil contains billions of microbes, so our gut could choose which microbes to propagate.

The **Lovebug theorists** suggest that these kinds of sensory preferences (such as enjoying the smell of fresh rain which is produced by the rain falling onto bacteria in the soil) could be byproducts of an ancient nature connectedness, and evidence for our co-evolution alongside the microbiome.

Awe

Awe often experienced in nature - makes us feel small, amazed, struck by mystery or beauty, and uplifted. [Research](#) - the more we experience awe, the calmer, kinder, more altruistic and resilient we are.

[Study](#) found that pursuing awe - paying more deliberate, acute attention to the world - can serve as an antidote to narcissism.

One group went on regular, 15-minute "awe-walks" over eight-weeks, the other group just walked about.

The awe walkers took a selfie on every walk. In their first images their faces loomed large but, over time, their faces occupied a smaller fraction of the frames, as they were trying to capture not just themselves but what they were seeing behind them — a tree with flame-coloured leaves, a sky turning golden, a bird strutting or preening. The researchers suggested this was training their brains to turn outwards.

Connection and consciousness

By immersing ourselves in nature we are reminded of our place in wild nature.

Through this reconnection, we begin to perceive ourselves as a more integral part of a larger ecological web, where every living being is interconnected and interdependent.

This can lead to a transformative shift in consciousness that empowers us to take action, not only for our own wellbeing but for the wellbeing of the planet.

By **embracing our ecological selves**, we become active participants in the collective effort to create a sustainable future for generations to come.