



national tree day

PLANET ARK



TOYOTA

Planting Trees: Just What The Doctor Ordered

Research Report



About This Report

Last year, Planet Ark published the research report *Climbing Trees: Getting Aussie Kids Back Outdoors* in support of National Tree Day 2011. This report discussed the profound shift in Australian childhood experience from outdoor to indoor play that has passed in a single generation. The report was based on an independent study of Australian attitudes, opinions and recollections, conducted by Pollinate, a communications research company, and sponsored by Toyota Australia. It outlined the nature of children's outdoor play in Australia, the decline of outdoor activity in recent decades, and the perceived benefits of – and barriers to – outdoor play.

The response to *Climbing Trees* was overwhelming. Feedback to Planet Ark clearly showed a hunger among Australians for a greater understanding of the importance of time spent in nature during childhood.

This report digs deeper into the intellectual, psychological, physical and mental health benefits of contact with nature for children. It combines two key elements. The first is a review of current local and international academic research in this field. This research reveals an emerging body of evidence that contact with nature during childhood could have a significant role to play in both the prevention and management of certain physical and mental health problems, and in forming environmentally responsible attitudes in future adulthood. The second element is new attitudinal research commissioned by Planet Ark and conducted by Pollinate, providing an insight into how Australians perceive the link between nature and children's health, wellbeing and development.

Planet Ark

Planet Ark is an Australian not for profit environmental organisation, founded in 1992. In partnership with the public, businesses, governments, councils, schools, community groups and other not for profit organisations, Planet Ark works to achieve real and measurable results in reducing our impact on the environment.

Since Planet Ark's National Tree Day began in 1996, more than 17 million native trees, shrubs and grasses have been planted by over 2.8 million volunteers across the country. It is Australia's largest community tree planting and nature care event, as well as the largest single nature care activity in Australian schools. Each year, over 250,000 Australian school-aged children take part in Schools Tree Day.

National Tree Day 2012 is Sunday 29th July and Schools Tree Day is Friday 27th July.

Toyota

Toyota Australia has been the Major Sponsor of Planet Ark's National Tree Day since 2000. Toyota has approached the partnership in a collaborative way and continues to mobilise its entire business network of dealers, staff and brand ambassadors to support, participate in and contribute to National Tree Day. Toyota's involvement in National Tree Day demonstrates its commitment to supporting the environment through community involvement, as well as ongoing innovations in technology such as the Hybrid Synergy Drive powered Prius and Camry Hybrid, the first commercially-available hybrid vehicle to be built in Australia.

Acknowledgements

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Attitudinal research was managed by Bernard Visperas from Pollinate.



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Foreword

It's been many years since Planet Ark held the first National Tree Day: many years of hard work, dirty clothes, community action and fun. Australians of all ages and from all walks of life have planted over 17 million native trees, shrubs and grasses. There's been tens of thousands of Tree Day sites and many, many Tree Day stories. But we've all been united by one shared experience: the sheer joy of getting out into the fresh air and sunshine (or rain) with friends and working up a sweat for the benefit of our planet.

Put simply, participating in National Tree Day makes you feel good.

The idea that contact with nature is good for us feels intuitively 'right'. I'm sure my love of nature grew from childhood adventures in my local bush, clambering up trees and building cubby houses with siblings and friends. Many people have similar stories of a love for nature that stems from childhood experiences, nature providing artistic inspiration, or serving as a refuge in times of stress. Canadian environmentalist David Suzuki traces his love for the environment back to his earliest childhood memories of fishing and camping with his father. Tim Flannery loved the beaches near his childhood home in Sandringham, Melbourne. For Tree Day co-founder Olivia Newton John, time spent in the Byron Bay hinterland was important in her recuperation from breast cancer.

Anecdotes like these are not new or uncommon. What is new is the emerging body of hard evidence that links childhood contact with nature with a range of health and wellbeing benefits, including:

- Positive mental health outcomes, such as reduced severity of ADHD symptoms, reduced stress levels, reduced depression, and increased confidence and self esteem;
- Physical health benefits, such as reduced risks of obesity and myopia, and improved recovery from certain medical conditions;

- Enhanced intellectual development, such as improved creativity and imagination, and improved academic performance; and
- A stronger sense of concern and care for the environment in later life.

As this report will detail, research is showing childhood contact with nature potentially provides much, much more than 'nice to have' life experiences. This research, and the emerging fields of biophilia and horticulture therapy, show there are times and circumstances in life where exploring a landscape or planting a tree may be 'just what the doctor ordered'.

Paul Klymenko
CEO
Planet Ark Environmental Foundation



"Family, nature and health all go together."

– Olivia Newton-John,
National Tree Day co-founder



Co-Foreword

A red-breasted robin flits among the foliage of a flowering gum in my direct line of vision, the smooth grey bark of a lemon scented gum catches my eye, and the leaves of some of the other 1,000 trees we have planted on our 17-acre country retreat stir slightly in the faint breeze. I am moved to give thanks for the privilege of having access to this beautiful environment – for the privilege of seeing, hearing and smelling nature at such close quarters.

We bought this property almost 35 years ago, when it was a remnant piece of degraded farmland. It was largely bare of trees and had suffered badly from erosion, such that the topsoil had all washed to the bottom of the very steep slope. Our children were small and we had little in the way of material resources, but we had a passion for environmental sustainability. In the process of restoring the land and building our passive solar, mud brick house (using largely second hand materials), our whole family engaged in planting trees, making mud bricks and becoming familiar with the environment around us. Wandering around the hillsides for hours on end, and coming back to report on what they'd found in "the canyon" – a tiny creek bed behind our hill – was a favourite occupation for our children. We lived the reality of Olivia Newton-John's view that "family, nature and health all go together".

Not everyone has the privilege of such a retreat, yet we know from research, including my own and that of others cited in this report, that the opportunity for contact with nature is crucial to human health and wellbeing. In particular, it is clear that childhood contact with nature is beneficial for children developmentally, intellectually, physically and socially. Perhaps even more importantly, at a time when the planet is under threat from climate change, resource depletion and pollution, childhood contact with nature fosters pro-environmental attitudes, which will be crucial for the restoration of a balanced ecosystem – crucial to the sustaining of all forms of life.

As a society, we need to make sure that all children have opportunities for contact with nature. Urban parks and gardens assist in achieving this, and there are great opportunities for whole families to become involved in environmental volunteering in local parks and reserves, and in events like Planet Ark's National Tree Day. But we need to also ensure that children have access to areas of 'wild' nature – opportunities to participate in nature on a larger scale – so that our children may grow as people who truly understand what American naturalist John Muir meant when he said:

"Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wildness is necessity; that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life."

I'd like to thank Planet Ark and the team behind this report for raising awareness among all Australians, but particularly parents and others responsible for caring for children, about the critical role that regular contact with nature plays in nurturing the health and wellbeing of our children, and our natural environment.

Associate Professor Mardie Townsend
Deakin University



Snapshot of Modern Childhood

Before discussing the benefits of childhood contact with nature, it is important to understand the context of physical and mental health challenges our children are facing and how these might be linked with the significant lifestyle changes experienced in Australian society in recent years.

Children's health challenges

Australia enjoys a high standard of living, a mild climate, healthy food and water, and peaceful, prosperous times. Despite this, recent decades have seen emerging physical and mental health epidemics among our children.

Nearly a quarter of Australian children are overweight or obese¹. This is particularly disturbing because it is linked to other health problems and social challenges, and can increase the likelihood of other health issues in adulthood, such as type 2 diabetes and even cancer. Childhood obesity numbers are rapidly growing. Public health advocates have warned that Australia is facing a "chronic disease time bomb"².

There are also growing concerns for the mental health of our children. 14% of Australian children have been diagnosed with a mental health disorder. It is also estimated that the proportion of children with Attention Deficit Hyperactivity Disorder (ADHD) is around 11%³.

14% of Australian children have been diagnosed with a mental health disorder.

Children's lifestyle changes: Green time to screen time

It comes as no surprise to public health and social researchers that Australia's recent years of prosperity have coincided with rises in childhood obesity and mental health problems. The last 20 or so years have seen dramatic shifts in lifestyle trends, such as the nature of houses and gardens, urban design, the working hours of parents, the use of childcare, time pressures on families, increased uptake of electronic entertainment and increased consumerism. Researchers have documented these changes and the influences they have on the experience of childhood in modern Australia.

Children now spend significantly more time indoors than playing outside and interacting with nature.

Key lifestyle trends:

- Compared with the 1980s, **children now spend significantly more time indoors than playing outside** and interacting with nature^{4 5 6}.
- **Today's children engage in different outdoor activities**, compared with the previous generation. There have been increases in the time spent by children in activities structured or arranged by adults and in adult-supervised youth sport, but significant decreases in time spent by children exploring nature, climbing trees and in other self-directed activities⁷.
- The house and garden on a quarter acre block of old is disappearing. Trends in new housing and renovations show a dramatic shift towards **larger houses on smaller blocks, with decreased garden space** and increased indoor space. Many display homes boast 'home theatres'. Time-poor parents favour



low-maintenance gardens or no gardens. Homes now have more indoor space per person than ever before⁸.

- **Our cities are becoming denser.** Fitting more people into established suburbs is important for population, sustainability and infrastructure policy. However, urban infill and property development projects may have come at the expense of public green spaces, reducing the available natural or garden settings that might have provided nature play opportunities in the face of shrinking backyards⁹.
- Parents' perceptions of **'stranger danger' and fear of crime**, perhaps fed by increased media reporting, have reduced the willingness of parents to allow their children unsupervised outdoor play, while **changing work patterns** have reduced the time many parents can spend with their children outdoors¹⁰.
- **Screen time has increased dramatically:** children are spending more time using electronic media¹¹. Research has suggested video games in particular can be addictive¹². In addition, 'electronic babysitters' like television and electronic games are convenient indoor activities that require little supervision.
- Increases in time spent playing with gadgets can come at the expense of time spent interacting with family members, participating in creative play and or playing outdoors¹³. Researchers have



linked this **'nature and culture deprivation'** with electronic media use¹⁴.

- Researchers also suggest **increased television watching** and sedentary lifestyles can increase **materialism and consumerism** among children and influence physical health. People have a tendency to snack while watching television. Television also increases exposure to advertising messages. The result is an increased risk of diabetes and obesity, and the self esteem issues associated with consumerism¹⁵.

Views of people who look after children

An online survey (hereafter referred to as the 'Planet Ark Nature and Children's Health Survey') was commissioned by Planet Ark and conducted in May 2012 to explore people's perceptions of the link between nature and children's health, wellbeing and development. 1006 Australians aged 18-85 years old were surveyed. This sample was nationally representative in terms of age, gender, location and metropolitan/regional split. Planet Ark was particularly interested in the perceptions of people who are **'carers'** – people who have regular responsibility of caring for children aged 15 or below, including parents, guardians, childcare workers and teachers. Those who don't have regular care of children, we have termed **'non-carers'** (though we're sure these 'non-carers' care deeply about many things, including children and the environment!)

One in four of carers said the children in their care have never climbed a tree.



When did the child(ren) under your supervision most recently do the following? (%)

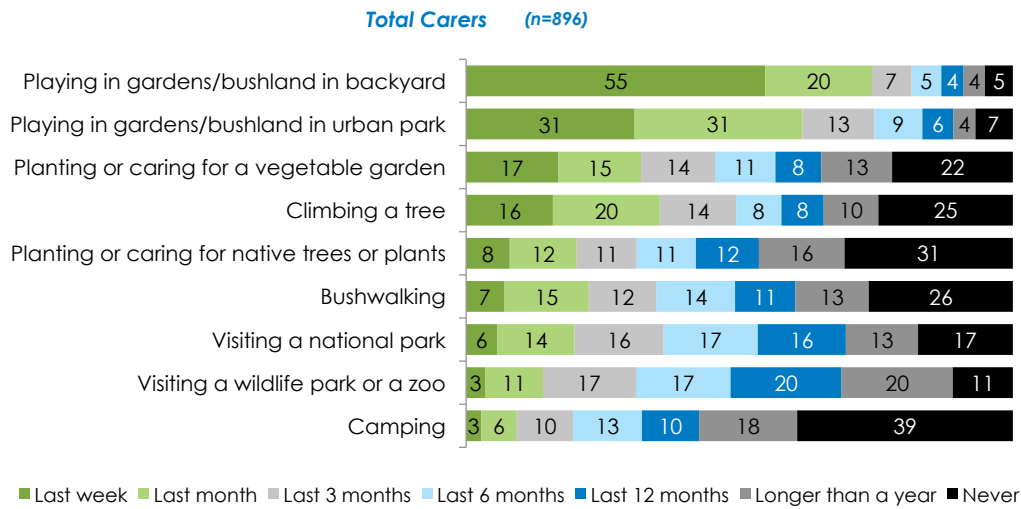


Figure 1: Children's most recent outdoor, nature-based activity as reported by their carers

As Figure 1 details, carers report playing in the backyard or an urban park as by far the most recent and common outdoor, nature-based activity undertaken by the children in their care. Other findings reflect the lifestyle changes mentioned in the previous section:

- 25% of carers said the children in their care have **never climbed a tree**,
- 26% of carers said the children in their care have **never been bushwalking**,
- 17% of carers said the children in their care have **never visited a national park**,
- 11% of carers said the children in their care have **never been to the zoo**, and
- 39% of carers said the children in their care have **never been camping**.

While this 'snapshot of modern childhood' paints a bleak picture, analysing these health and lifestyle trends and challenges helps us to understand their causes and set about rectifying them, finding ways and reasons to put nature back into childhood.

Understanding the language of research

In summarising academic research on the benefits of contact with nature, we're bringing together research from health, education, psychology, therapeutic horticulture, sociology, public health policy, urban planning, early childhood development and many other fields. In such complex areas of science and social science, direct 'causal' relationships can be difficult to prove, so much of the research focuses on describing things that have been observed to go together – things that are 'correlated' or 'associated'. Note that when this report (and other research reports for that matter) refers to an association between two things – such as an association between decreased time spent in nature and increased depression rates – this does not necessarily mean that one factor *causes* the other. Also note that many research reports are based on studies of many people, so the association or trends reported hold for the average of the group of people studied and the broader population they represent. 'Average' does not mean the same result applies for every individual person.



Benefits of contact with nature: Healthy minds, healthy bodies

In general terms, it is well understood that outdoor activity is good for physical health. Many people are aware of the importance of exposure to sunshine to promote the body's synthesis of **vitamin D**, which is important for strong bones, muscles and overall health¹⁶. Sunlight also helps regulate the biological time clock, signaling to the brain that it's time to be awake. Outdoors can also be the realm of exercise, sport and other activities that improve fitness and strength.

The Sydney Myopia Study found that high levels of outdoor activity were associated with lower levels of myopia in students.

Outdoor play can also influence eyesight. The Sydney Myopia Study found that high levels of outdoor activity were associated with lower levels of myopia (short sightedness) in students. Outdoor environments challenge children's eyes with a diversity of focal points at a wide range of distances from the eye, giving them the stimulation and exercise they need to develop. Children who combined high levels of 'near work', such as reading or electronic games, with low levels of outdoor play were more likely to have poor eyesight¹⁷.

What is less well understood are the many benefits for children of contact with nature. Childhood is a time of rapid physical, mental and emotional **development**. Time spent in nature provides a diversity of sounds, sights, smells

and textures, and a variety of plants, animals and landscapes that children can engage with. This mental and sensory stimulation is important in human developmental processes. The diversity and sometimes unpredictability of nature also stimulates creative play, exploration and divergent thinking – the thought processes by which we look for new opportunities or explore different ways of getting things done^{18 19 20}.

Natural environments also encourage resilience and flexibility. Chaotic and uneven by nature, they challenge balance and coordination, and their unpredictability provides mental stimulation. In contrast, constructed environments, such as suburban parks, are typically even, predictable and homogenous. While they provide stability and reduce risks of injury, they may not create the challenges that further develop motor skills. One Norwegian study found children who played in the woods behind their school performed better on tests of motor coordination than those who played in a traditional playground²¹.

Time spent in nature offers a simple, lifestyle-based intervention that can help to address pediatric mental and physical health issues such as obesity, ADHD, vitamin D deficiency and mental health problems²². The following sections look at specific conditions and the role contact with nature can play.

Natural environments encourage resilience and flexibility, challenge balance and coordination, and provide mental stimulation.



Contact with nature: Many shades of green

From a room with a view or a nature documentary on television to a once-in-a-lifetime safari holiday, there are many different types of experiences with nature. These different experiences have differing benefits, and so researchers investigating the benefits of interacting with nature are careful to define both the type of interaction and the effects or associations being studied. There are also different definitions of what is meant by the word 'nature'. Here is a guide to some of the terminology used by researchers studying the benefits of contact with nature.

Nature views or the 'naturalness' of views refer to people encountering nature by observing it, for example, through a window. It is a passive form of interaction.

Technological nature refers to simulations of nature or representations of it by technological means, such as videos or live webcams of natural environments or robot animals²³.

Nearby nature refers to accessible parks, beaches or other natural areas that are conveniently accessible to children, be it at their homes or schools.

Wild nature refers to wilderness or bush settings.

Wild nature activities are those that occur in such settings, such as hiking, playing in nature reserves, camping, fishing or conservation activities (such as Landcare).

Domesticated nature refers to more human designed or controlled parks or gardens, such as food gardens in schools, suburban parks and even indoor pot plants. It can also include interaction with animals, such as pets. **Domesticated nature activities** include picking flowers or produce, planting trees or seeds, and caring for plants.



Good for mental health: Reducing stress and depression; Increasing self esteem and confidence

Facing psychological challenges, though sometimes difficult, is a normal part of childhood and emotional development. Humans experience different types of **stress**. There are the smaller day-to-day challenges, such as minor disappointments, the pressures of schoolwork or playground disagreements. There are also more significant and detrimental events, such as moving interstate, the death of a pet or loved one, or parental separation or divorce. Researchers have found that contact with nature can help children deal with stress. In particular:

- Even the simple act of viewing slides or visual images of nature, and particularly water, can have a calming, stress reducing effect²⁴.
- Outdoor settings in nature provide restoration from cognitive (mental) effort and stress^{25 26}.



- A US study found that that vegetation near the home (a form of ‘nearby nature’) helped moderate the impact of stressful life events on children’s psychological wellbeing in rural areas. The study found that stress levels were reduced for children with high levels of nearby nature compared with those with little nearby nature. This stress-buffering effect was most pronounced for those experiencing the highest levels of life stress²⁷.
- A Spanish study found children who have more frequent daily contact with nature show less stress than those who do not spend time in nature, taking into account both the residential and school environment²⁸.
- Deeper, more active contact with nature can have long-term stress-relieving benefits. Intense, joyful and highly memorable ‘ecstatic experiences’ in nature during childhood provide a reservoir of calming and stabilising memories that are drawn on during stressful periods in later life²⁹.

Research shows that with nature can help children deal with stress.

Research is investigating nature contact and psychological wellbeing from both ‘prevention’ and ‘cure’ perspectives. Nature providing stress-relief is a ‘cure’ approach. In the case of **depression**, there is an indirect association linking increased depression with decreased time spent in nature, via the associated time spent consuming media. This is an important consideration for the prevention of mental health issues.

- Increased time spent indoors watching TV exposes children to advertising and marketing messages. This commercialisation of childhood encourages a consumer culture and materialism³⁰. Children who score high on measures of materialism have greater incidence of some mental health issues such as anxiety, depression, discontent and substance abuse^{31 32}.



The two complementary approaches to improving the psychological wellbeing of children are (1) reducing the negative psychological states, as outlined above, and (2) accentuating positive states. For the latter, building **confidence** and encouraging healthy **self esteem** are vital in producing happy children.

- Unsupervised time spent in outdoor, nature-based activities provides children with opportunities for independent adventure, risk taking, and exploration. This contributes to the development of a sense of self-sufficiency and confidence in young people³³.
- The previously mentioned US study of the stress moderating benefits of nearby nature also found that children with higher levels of

nearby nature had a higher sense of self-worth, and that the links between sources of stress and their effect on children's self-worth were weaker for those children with greater exposure to nature³⁴. In short, exposure to nature helps strengthen children's self esteem, making them more resilient during stressful times.

Is contact with nature on the health radar of carers?

In one section of the Planet Ark Nature and Children's Health Survey, a variety of potential ways to achieve health, wellbeing and development outcomes for children were listed (see pg 13). Survey participants were asked to choose the three they thought were most effective.

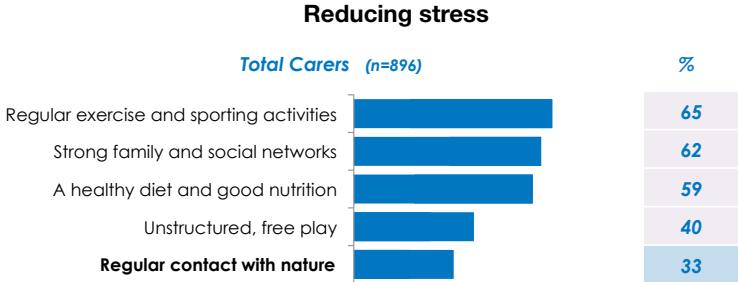


Figure 2: Methods or influencers perceived by carers to reduce children's stress levels.

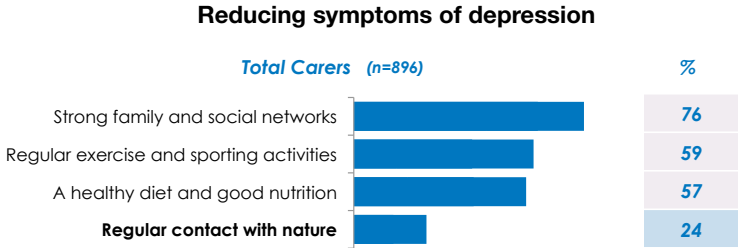


Figure 3: Methods or influencers perceived by carers to reduce symptoms of childhood depression.

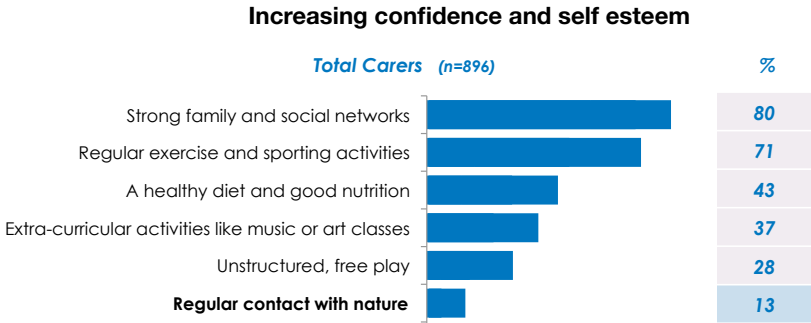


Figure 4: Methods or influencers perceived by carers to increase children's confidence and self esteem.



Health and wellbeing influencers/interventions:

- A healthy diet and good nutrition
- Counselling or psychotherapy
- Extra academic tuition
- Extra-curricular activities like music or art classes
- Holistic practices like meditation, yoga, active relaxation or alternative medicines
- Medication
- Regular contact with nature
- Regular exercise and sporting activities
- Strong family and social networks
- Unstructured, free play
- None of these

Carers most frequently identified regular exercise and sporting activities, strong family and social networks, and a healthy diet and nutrition among the top three methods or influencers they considered to be the most effective in reducing stress levels, reducing the symptoms of depression and increasing confidence and self esteem. Only 33% included contact with nature in their top three for reducing stress (Figure 2) and less – 24% – for reducing the symptoms of depression (Figure 3). Only 13% of carers considered contact with nature a top method of improving confidence and self esteem (Figure 4). The results show **regular contact with nature is not typically considered by carers as fundamentally important for good mental health**. In short, it's not on their health radar.

Only 13% of carers considered contact with nature a top method of improving confidence and self esteem.

The diversity of biodiversity stimulates creative and imaginative play.

Good for the mind: Improving creativity and imagination

Just as contact with nature has a role to play in mental health, it is also important for intellectual development, ability and performance. The ability of experiences in nature to improve the creativity and imagination of children can be summed up in the words stimulation, inspiration and fascination.

- As previously discussed, nature – particularly wild nature – provides a diversity of experience, textures, sensory experiences, plant and animal species and landscapes that children can engage with, which in turn provides mental and sensory stimulation. Literally, the diversity of biodiversity stimulates creative and imaginative play, enjoyment, exploration and divergent thinking³⁵.
- Powerful memories of experiences in nature can extend its influence into the longer term. The wonder and delight of environmental memories can provide meaning, serenity and creative inspiration³⁶.
- In contrast, it appears that built-up environments and hard-surfaced play areas can reduce the incidences of creative play among children. One study found children in areas with trees and vegetation show more creative social play than children in more barren, hard-surfaced or built play areas³⁷.



The ecology of imagination

American writer, social worker and researcher Edith Cobb (1895 – 1977) spent many years collecting and reading biographies and autobiographies for an insight into the development of imagination in children in different countries and historical periods. Asking the question “Is genius shaped by the imagination of childhood?”, Cobb published her reflections on her research and her observations of children’s play, first in an essay (1959) and later in the book *The Ecology of Imagination in Childhood*³⁸. Cobb wrote that the writing of creative thinkers showed that many returned to powerful childhood memories of time spent in nature ‘in order to renew the power and impulse to create’.



Creativity... and Backpacking!

One University of Kansas (KU) study³⁹ investigated a group of participants in a backpacking trip, using a standard test to gauge creative intelligence and insight. The researchers found a significant boost in creativity among participants after a few days spent in nature. Lead researcher Associate Professor Ruth Ann Atchley said the ‘soft fascination’ of the natural world appears to refresh the human mind, offering refuge from the noise of modern life.

“We’ve got information coming at us from social media, electronics and cell phones,” said Atchley, chair of psychology at KU. “We constantly shift attention from one source to another, getting all of this information that simulates alarms, warnings and emergencies. Those threats are bad for us. They sap our resources to do the fun thinking and cognition humans are capable of – things like creativity, or being kind and generous, along with our ability to feel good and be in a positive mood.”

Views of people who look after children

In this case, the Planet Ark Nature and Children’s Health Survey found a stronger perception of the benefits of contact with nature in boosting creativity and imagination. Unstructured, free play also scored highly, suggesting carers understand the importance of ‘free’ in ‘free time’ and that closely supervised and structured play, while reducing some risks, can also stifle creativity.

Improving creativity & imagination

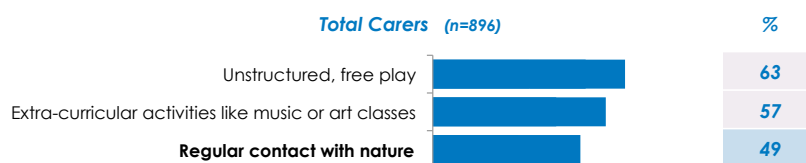


Figure 5: Methods and influencers perceived by carers to improve children’s creativity and imagination.



Good for the mind: Improving academic achievement

The academic achievement of children can be improved through a number of approaches. First, we can influence and support the development of cognitive and critical thinking skills. We can also improve their intellectual function when learning or doing schoolwork. Finally, we can help children directly acquire knowledge and an understanding of the world around them. These three – **development, function and knowledge acquisition** – are strongly supported by outdoor nature-based play.

In the book *The psychology of environmental problems*, authors Koger and Winter summarise the influence time spent in nature has on **intellectual development**,⁴⁰ drawing from the research of Stephen Kellert^{41 42}:

“A significant part of a child’s intellectual development involves learning to discriminate, categorize, and name different objects. Due to the wide range of things, features, and behaviors observable within nature, experiences therein provide extensive opportunities for children to acquire these abilities. Observing natural phenomena such as weather patterns and nonhuman animal habitats facilitate children’s comprehension of relationships; snow falls and ice forms only when temperatures are in a certain range; ducks are seen near water, and so forth.”

It is interesting to note that the influence of contact with nature on intellectual development begins early in life, before school and, consequently, before many parents, carers and the children themselves are measuring academic achievement.

Academic performance is typically measured and monitored once children begin formal education. Academic performance relies on children’s cognitive function – their ability to perform mental processes, including memory, problem solving, focused attention, using and understanding language, reasoning, and decision-making. One aspect that is particularly important in the classroom is

‘directed attention’ – the ability to maintain focus on a particular task while managing other distractions. Over extended periods of concentration, the brain experiences **directed attention fatigue**, which can diminish effectiveness. Sleep provides some restoration, but is not sufficient on its own⁴³.

Several studies have shown a relationship between **nature-based restorative experiences** and information processing effectiveness. One US study compared wilderness vacationers with urban vacationers and a non-vacationing control group⁴⁴. The results found the wilderness group showed a significant improvement in proof-reading performance, a task that is highly demanding of directed attention, following their trip. The other two groups showed a pre-test to post-test decline.

Another study first gave participants mentally tiring tasks and then compared the attention fatigue restorative benefits of 40-minute walks in a natural setting, 40-minute walks in an urban setting and 40 minutes of ‘passive relaxation’ (listening to soft music and reading magazines). On average, the resulting restorative benefits were highest for the natural environment group⁴⁵.

One approach to using contact with nature to support academic performance is using the natural environment as a classroom. A Florida-based study found links between **critical thinking skills** and environment-based education in high school students⁴⁶. Environment-based education also gave the students a disposition towards critical thinking.

“...few areas of life provide young people with as much opportunity as the natural world for critical thinking, creative inquiry, problem solving and intellectual development.”

– Dr Stephen Kellert⁴⁷





There are also associations between nearby nature and nature views, and cognitive function and self-discipline. Consequently, **moving house** can make a difference. A pre-move and post-move study found moves that improve the 'greenness' of nearby nature correlated with improved cognitive function⁴⁸.

Interestingly, **gender** can make a difference. One study found the naturalness of the view from the home could be used to predict female children's performance on tests of concentration, impulse inhibition, and delay of gratification. For boys, there was no relationship. The researchers suggested that, for boys, who typically spend less time playing in and around their homes, more distant green spaces may be important⁴⁹. In the words of the authors:

"These findings suggest that, for girls, green space immediately outside the home can help them lead more effective, self-disciplined lives."

Finally, contact with nature allows children to directly observe and acquire **knowledge of biodiversity**, ecology, weather, local wildlife and

the natural world. Both structured programs and unstructured free play in natural settings allow children to learn about and connect with local common wild animals (such as birds, butterflies and lizards) and give children a sense of place and a connection to their **local environment**⁵⁰. For example, Schools Tree Day activities that focus on planting local native species and/or wildlife attracting plants help give children a rich knowledge of their unique local environment, which might be quite different to the images of nature found in, for example, European storybooks or American movies.

Schools Tree Day activities can help give children a rich knowledge of their unique local environment.





Pokémon versus Parakeets

One side effect of the shift to indoor playtime is that children are losing their knowledge of local biodiversity, compared with previous generations. An amusing, but thought-provoking, UK-based study compared children's ability to recognise and identify various local wildlife species (such as oak trees and badgers) and Pokémon characters. The results showed children in their primary school years learn far more about Pokémon characters than native wildlife.

The good news is this study supports the 'Biophilia Hypothesis', the theory that humans have an innate inclination to understand and connect with other living things (more on this later). In the words of the authors, "young children clearly have tremendous capacity for learning about creatures (whether natural or man-made)". The bad news is the lack of knowledge of local wildlife reduces people's desire to protect it: **"People care about what they know"**⁵¹.

The Planet Ark Nature and Children's Health Survey results suggest a similar situation in Australia, with 76% of respondents agreeing that most kids are unable to identify common native trees, like wattle or bottlebrush. It seems the global toy marketplace is out-competing the local environment in capturing the hearts and minds of children. The challenge for carers is that Pokémon are much easier to find than parakeets. However, you might find that children find engaging with a skink is just as exciting as playing with a Squinkie, perhaps more so. See if you can plant some wildlife attracting plants in your garden and help your kids meet some locals! For more information, visit the Flora for Fauna website: **FloraForFauna.com.au**

Views of people who look after children

The Planet Ark Nature and Children's Health Survey shows that contact with nature is far from 'top of mind' among carers as a means of supporting children academically. Yet, as detailed above, there is strong evidence linking contact with nature with intellectual development and academic performance. This suggests contact with nature, nature-based play and outdoor education could represent untapped resources for the education of our children, helping them develop, concentrate, learn and relax as they go through their school years.

Improving academic achievement

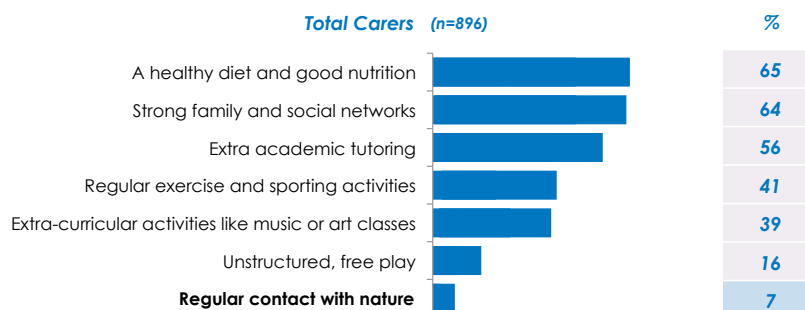


Figure 6: Methods or influencers perceived by carers to improve children's academic achievement.





It is interesting to consider these results in the light of the various stages of childhood and education. For many parents, the prime time for considering interventions to support their children's academic performance is the secondary school years, in response to the grades they've received and/or in preparation for university entry, making private education and tuition more common in these years. It is unsurprising that additional academic tutoring scored highly among carers as an effective intervention. It is undertaken for the purpose of either enriching able students or providing remedial assistance for those falling behind⁵². However, the research shows that intellectual development begins early and that future academic performance is influenced by much more than the choice of school. Again, contact with nature has a role to play at all stages of childhood.

Good for the mind: Reducing the symptoms of ADHD

Attention deficit hyperactivity disorder (ADHD) is a developmental disorder characterised by the behaviours of inattentiveness, impulsiveness, and hyperactivity. Depending on the severity of their condition, home and school life can be difficult for children with ADHD and their parents, carers, teachers and peers. ADHD represents a significant burden on both the health care system and lives of individual people.

An estimated 11% of children and adolescents fulfill the criteria for ADHD, with boys making up the vast majority of diagnosed cases⁵³. ADHD is

complex, so the assessment and treatment of ADHD often involves a tailored combination of a number of approaches. Treatment typically takes two approaches: medication to reduce symptoms, and 'psychosocial treatment', including things like behaviour modification and speech therapy, which helps children function despite their symptoms. The proportion of children with ADHD prescribed with stimulant medications is small but growing. Common medications are methylphenidate (MPH, also known by the trade name Ritalin) and dexamphetamine (DEX). While medication has been effective for the management of symptoms, it can also have side effects, including sleep disruption, loss of appetite, nervousness and drowsiness. The side effects are related to dose-size, so prescribing patterns seek to find the minimum dose size required for the desired therapeutic effect⁵⁴. There are some concerns that the benefits of medication may be only temporary and do not necessarily change the long-term social and academic success of children⁵⁵.

Research has found that children with ADHD function better than usual after activities in green settings.

Nationally, an average of about 0.5% of children are prescribed stimulant ADHD medications, but this varies between states. In NSW alone, and during the period 1 June 2006 to 31 May 2007, 19,338 children (1.5% of 4-17 year-olds in NSW) were approved for treatment with stimulants for ADHD⁵⁶.

In recent years, researchers Frances Kuo and Andrea Faber Taylor and their colleagues at the University of Illinois Landscape and Human Health Laboratory have been investigating nature-based activities and their potential to **reduce the symptoms of ADHD** in children. Following are some of their key research findings:



Reducing symptoms of ADHD

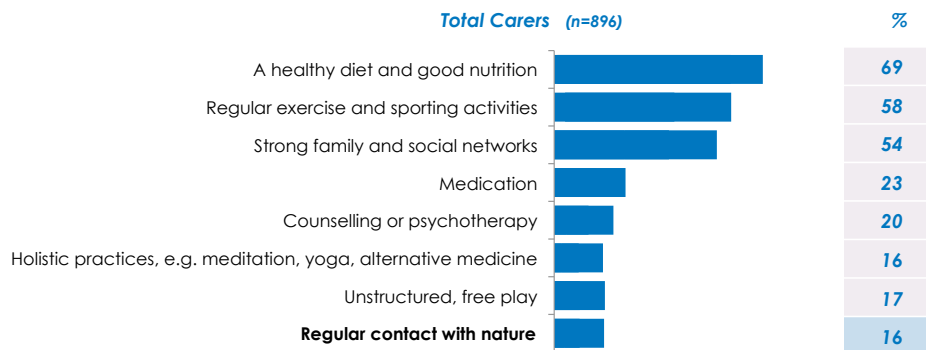


Figure 7: Methods or influencers perceived by carers to reduce the symptoms of ADHD.

- Recognising the attention challenges of ADHD, attention fatigue restoration effects of contact with nature (outlined in the previous section) were tested in an ADHD context. The results found that children function better than usual after activities in green settings and that the ‘greener’ a child’s play area, the milder his or her ADHD symptoms⁵⁷.
- Green outdoor settings appear to reduce ADHD symptoms in children across a wide range of individual, residential, and case characteristics⁵⁸.
- Children concentrate better after a 20-minute walk in a park than after a 20-minute walk in a well-kept urban setting. Consequently, ‘**doses of nature**’ could serve as a safe, inexpensive and accessible new tool in the suite for managing ADHD⁵⁹.
- For hyperactive children, the apparent advantage of green spaces in reducing symptoms is true only for relatively open green settings⁶⁰.

This research is in its early years. The researchers are careful to advise against dismissing the benefits of behaviour treatments⁶¹. They also conclude that randomised clinical trials testing the impacts of regular exposure to green space as a treatment for ADHD are warranted. The hope is that a dose of nature may offer a healthier, more affordable alternative to medication... and one in which the only adverse side effects may be grass stains on jeans.

Views of people who look after children

Once again, contact with nature is not a top-of-mind intervention for Australian carers for reducing the symptoms of ADHD, reflecting how new this area of research is. The research undertaken in this area to date shows that interaction with nature may be a useful addition to the toolkit for teachers, parents and those with responsibility for children with ADHD. It is hoped that future research will provide further evidence to support this idea.

Good for the body: Reducing the risk of being overweight or obese

An estimated 17% of Australian children are overweight and 6% are obese⁶². These rates are on the rise. Overweight children face physical and mental health problems, both now and in their future. During childhood, obesity can affect children’s confidence and self esteem, and overweight children are more likely to be bullied than other children. Children who continue to be overweight into adulthood face greater risks of type 2 diabetes, heart disease, high blood pressure, stroke, joint problems, breathing problems, some forms of cancer and continued self esteem issues. The concept of body mass index (BMI) is used to approximate body fat and is defined as a person’s weight (in kilograms), divided by the square of his or her height (in metres).



Health authorities and researchers often use BMI to indicate healthy weight ranges. According to the World Health Organisation, a person with a BMI of 30 or more is generally considered obese, while a person with a BMI equal to or more than 25 is considered overweight.

To understand how a dose of nature may also help with childhood obesity, it is important to understand in simple terms the relationships between diet, exercise and body weight. At the heart of weight loss or gain is the **'energy balance equation'** – the balance between the 'energy intake' of the food we consume on one side, and the 'energy expenditure' or the kilojoules burned by physical activity on the other side. Put simply, when our energy intake is greater than our energy expenditure – when we eat more kilojoules than we burn – we store the excess energy in the form of fat and put on weight. Surprisingly, contact with nature has an influence on both sides of this equation.

An estimated 17% of Australian children are overweight and 6% are obese.

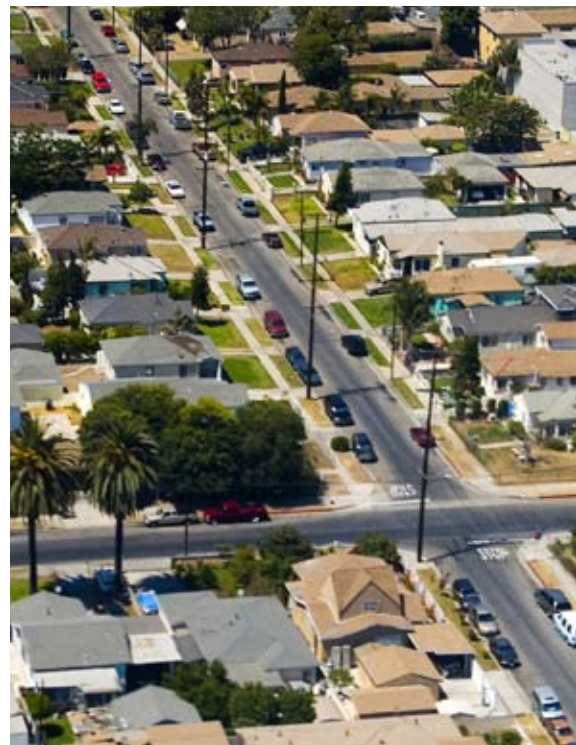
Rises in rates of childhood obesity have coincided with the shift of playtime from outdoors to indoors. While there's a strong theoretical relationship between physical activity and body weight, it's difficult to prove in isolation from the many other lifestyle, diet and physiological factors that are correlated with changes in weight. Here is a snapshot of some of the research:

Burning energy: the nature of neighbourhoods

- A NSW government report *'Creating healthy environments: a review of the links between the physical environment, physical activity and obesity'* highlighted the influence that the urban form (natural and built environment) has

on physical activity, particularly the transport systems that link residential areas with workplaces and encourage active transport, and the availability of facilities, footpaths and cycle ways for physical activity⁶³. This report noted media stories of 'obesogenic' neighbourhoods and also talked about the importance of 'walkable' neighbourhoods. It made very little delineation between adults and children.

- Some researchers counter that the densification of our cities, while important for population, sustainability and infrastructure policy, has relied on this idea of the health benefits of 'walkable neighbourhoods' and ignored or understated children's issues. University of South Australia researchers Fiona Kinner and Lou Wilson suggest that studies of 'walkable communities' rarely involve children and that there is stronger correlation of healthier body weight for children with green space, rather than residential density⁶⁴. Therefore, changes to suburbs that improve walkability at the expense of open green space may not be the best thing for preventing obesity in children.



- A US-based 2-year study of children aged 3-16 years found that children living in greener neighbourhoods had lower BMI scores after two years and this association appears to be independent of neighbourhood density. The authors conclude, “These findings support the exploration of the promotion and preservation of greenspace within neighborhoods as a means of addressing childhood obesity.”⁶⁵

A US study found that children living in greener neighbourhoods had lower body mass index scores after two years.



Burning energy: the nature of play

- The US-based not for profit organisation Children & Nature Network has researched and written extensively on the relationships between play in nature, physical activity and obesity in childhood. They write that natural areas may encourage physical activity and thus help people better maintain their energy balance and that, these days, many children do not get the physical activity they need⁶⁶.
- The well-documented shift from outdoor to indoor play has seen growth in the diversity of sedentary activities, such as television and electronic games. Researchers say these activities ‘squeeze out’ time for more active pursuits⁶⁷. The Planet Ark Nature and Children’s Health Survey found that nearly half of carers questioned believe the children in their care prefer indoor activities.
- It has been found that BMI in children has a positive association with hours spent watching television and is negatively associated with hours of outdoor play. “Moreover, a ratio of outdoor play to television time was a significant predictor of BMI”⁶⁸. In short, the proportion of time spent outdoors compared with watching television is important.
- Children with better access to public parks and recreation programs are less likely to have significant increases in BMI over time⁶⁹.
- A Melbourne-based study of 10-12 year olds over 3 years confirmed an association between time spent outdoors and lower BMI. “The prevalence of overweight among older children at follow-up was 27-41% lower among those spending more time outdoors at baseline.” The authors recommended further investigation into time outdoors as an obesity prevention intervention⁷⁰.

An underlying theme of the nature of play and its influence on obesity risk is the importance of opportunities for outdoor play and how these have changed in recent decades. Getting children outdoors is now something that is seen as taking



time and effort, and faces stiff competition from the plethora of passive, impulse-rewarding toys and gadgets vying for our children’s attention. As one journal article notes, “Historically, physical activity was not something one set out to do, it was simply part of life”⁷¹. The challenge for carers, policy makers and urban planners is to find ways to make nature-based physical activity once again a normal part of childhood.

Vitamin D and obesity

Underlying the links between decreasing nature-based play and increasing childhood obesity, one 3-year longitudinal study found a correlation between vitamin D deficiency and obesity in school aged children in Bogota, Colombia⁷². The study found that vitamin D deficient children, compared to vitamin D sufficient children, had greater increases in body mass index, skinfold-thickness ratio and waist circumference over time.”

Food gardening offers an opportunity for children to learn about nutrition.

Energy intake: the nature of eating

Nature-based activities can also have an influence on the energy intake side of the energy balance equation. Green school grounds, home vegetable gardens and school kitchen gardens, such as the Stephanie Alexander Kitchen Garden Program, can play a role in improving physical health and promoting healthy eating. Food gardening at school offers an opportunity for children to learn about nutrition and supports healthy eating choices⁷³. These are examples of domesticated nature activities that offer opportunities for active learning and improving health literacy.

In contrast, watching television as an alternative to nature-based play can encourage unhealthy eating habits. People have a tendency to snack while watching television and they are also exposed to advertising messages, including those promoting junk food⁷⁴.

Views of people who look after children

Unsurprisingly, carers rate regular exercise and a healthy diet as the two most effective means of reducing the risk of children being overweight or obese, while awareness of the value of contact with nature is low. However, the research detailed in this section has shown that contact with nature is associated with physical exercise and can help promote healthy eating.

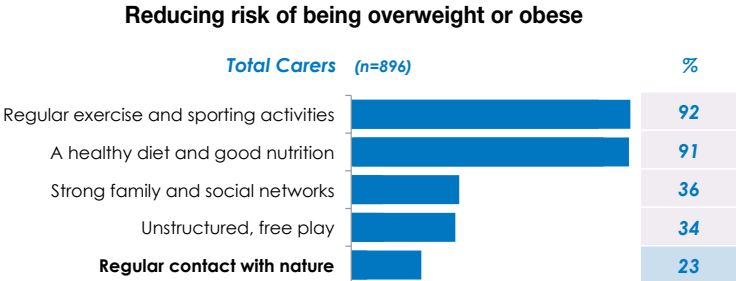


Figure 8: Methods or influencers perceived by carers to reduce the risk of children being overweight or obese.



Good for the environment: Growing responsible adults

Plenty of people who profess an interest in the environment and a sense of responsibility to look after it will tell stories of climbing trees, camping, exploring and playing in nature as children. Many trace their love for the planet back to these childhood experiences. These attitudes in adulthood are important. 'Pro-environmental' attitudes make us more likely to purchase greener products, more amenable to environmental protection policies, more responsible in our living and working patterns, and more likely to factor the environment into our decision-making. Today's children are tomorrow's adults: carers, workers, leaders and decision-makers. For all of our sakes, and for the sake of our natural environment, it is important that we grow environmentally responsible adults.

Research shows that a variety of nature-based experiences during childhood have an influence on children's attitudes and, depending on the type of the experience, this influence can last a lifetime. For example, one US study found a clear positive association between participation in wild nature activities (hiking, camping and hunting) during childhood and future environmental attitudes and behaviours. Childhood participation in domesticated nature activities (tending flowers and gardening) was associated with pro-environmental attitudes in adulthood, but had only a marginal relationship with adult environmental behaviour⁷⁵. In short, people who had more nature experiences during their childhood are more likely to have pro-environmental attitudes, which may further influence their pro-environmental behaviours. Other researchers have investigated whether or not vicarious or technological interactions with nature (through television, movies, computers, books, pictures, etc) and/or indirect nature experiences (visits to zoos, museums, and nature



centres) can have a similar influence, but found the effects generally smaller and more fleeting than those gleaned from direct outdoor experience⁷⁶.

How 'connecting with green' in childhood can lead to greener behaviours later

How does a childhood experience become an attitude shift and eventually a leaning towards greener behaviours in later years?

Through experiences in nature, children form a sense of connection to nature that researchers suggest has four dimensions⁷⁷:

- Empathy for creatures,
- Enjoyment of nature,
- Sense of oneness, and
- Sense of responsibility.

Children often perceive other species, such as birds or trees, as being like humans, for example, with an ability to feel pain. They recognise them as fellow living things. Direct interaction with nature (including pets) stirs feelings of empathy, making the animal or plant worthy in the child's eyes of moral consideration, such as concern for their needs or a desire to protect them⁷⁸.



Increasing desire to protect the environment

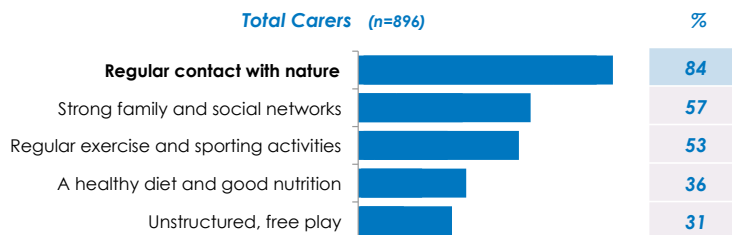


Figure 9: Methods or influencers perceived by carers to increase children's desire to protect the environment.

We've already seen that powerful positive memories of time spent in nature during childhood provide a reservoir of emotional stability in later life. For some people, these nature-based experiences provide a sense of integration of nature and human life. For some, it also brings an awareness of nature as a dynamic process of life and death or night and day, and they, themselves, are part of it. This self-perception of being 'part of nature' and in harmony with it can calm fears and provide a sense of stability, even amidst the dramas of life⁷⁹.

When children recognise themselves as being part of nature, they develop a sense of **ecological self**. The stronger this self-perception as being part of nature, the more likely a child is to protect it⁸⁰. Children learn active and responsible citizenship through opportunities to practice it. This can be incorporated into school- and community-based environmental programs⁸¹.

In contrast to the pro-environmental attitudes and behaviours associated with childhood contact with



nature, increased time spent indoors watching television can lead to attitudes of materialism and consumerism in children. Over time, excessive materialism encourages superficiality and a self-centeredness that has less concern for others, the community and the broader environment⁸².

Views of people who look after children

The Planet Ark Nature and Children's Health Survey shows carers clearly rate contact with nature as fundamentally important in increasing children's desire to protect the natural environment. They also highlight the importance of strong family and social networks. On this aspect, academic research has found that family values towards nature are also strongly associated with children's connection to nature⁸³.

Environmentally responsible adults: An endangered species?

Planet Ark's 2011 *Climbing Trees* report on the generational change in outdoor play, and a sizeable body of academic research, all show that childhood has changed dramatically. Children have less access to wild, natural areas and less unsupervised time to roam and explore. Gone are the days when parents would send their children outside to play (usually with little resistance from the children!) and not expect to see them until meal times. As a society, we are experiencing an **extinction of experience**. It is now harder for this generation of children to connect with nature and identify with it. The result is declining sense of moral responsibility towards the environment⁸⁴.



As a society, we may be losing our ability to recognise what a healthy landscape looks like.

The natural environment itself has also changed. When children today are able to spend time in nature, they're likely to be visiting degraded environments, which are less able to inspire the kind of ecstatic experiences that have proven so powerful in the past. Perhaps more alarming is that, as a society, we may be losing our collective memory of pristine, unspoilt environments, and therefore losing our ability to recognise what a healthy landscape looks like. We are at risk of **generational environmental amnesia**, a phenomenon in which people view the state of the environment as they experienced it in their childhood as the benchmark of 'normal' in order to evaluate future environmental degradation⁸⁵. Thus, the youth of each ensuing generation becomes more likely to view a degraded environment as normal, non-degraded and acceptable. Over time, our society's baseline by which we view the health of the environment declines.

Bringing it together: Humans in an ecosystem for living and learning

This report is just a snapshot of the growing body of research that strongly demonstrates that passive contact with nature has a range of health and wellbeing benefits, for both children and adults. It also indicates that more active and social nature-based activity could lead to even greater enhancement of health and wellbeing, and that nature-based interventions could be used in the treatment of certain physical and mental conditions⁸⁶. A recurring theme is that nature makes us happier and calmer, and stimulates our development, and that we are generally healthier when nature is an integral and active part of our childhood. The research also suggests that, when we are deprived of nature, we are less happy and less healthy. This is a problem in our increasingly urbanised world.

In his landmark book *Last Child in the Woods*, journalist Richard Louv coined the term **Nature Deficit Disorder** to describe the growing trend



of wide ranging mental health and behavioural problems experienced by children as they spend less time outdoors and in nature⁸⁷. By giving the phenomenon a name that evokes the language of mental health, Louv highlights it as something that is not normal or healthy, but rather a serious problem that society needs to recognise and address. Among the causes of nature deficit disorder, Louv includes fear-fuelled hyper-vigilant parenting, the loss or restriction of natural areas near children's homes and in cities, and the competing attractions of (indoor) electronic toys and media. Some researchers have similarly described this trend and its causes as **'nature and culture deprivation'**.⁸⁸

Among its effects, Louv includes many of the mental and physical health issues described in this report, including ADHD, depression, lower academic grades and childhood obesity. Around the world, many organisations are working to combat this phenomenon, including the Children & Nature Network (which Louv co-founded) and the No Child Left Inside Coalition and, in Australia, Planet Ark's National Tree Day, Junior Landcare, Nature Play WA and the Victorian Child & Nature Connection. We need to get nature back into our cities and towns to make them healthier environments for people and to foster the connection between humans and the natural world⁸⁹.



Research has shown that we are generally healthier when nature is an integral and active part of our childhood.

Biophilia – because we're born that way

Animals, flowers and trees are among the first things that capture the interest and imagination of small children. Scenic views are highlighted in the brochures of travel agents and real estate agents alike. Why is nature so important to humanity?

American biologist E. O. Wilson, known as 'the father of sociobiology', says that humans have an instinctive urge to affiliate with other forms of life. 'Biophilia' literally means 'love of life or living beings'. Wilson introduced the term 'biophilia hypothesis' to explain the bond between humans and other living systems and that it exists as a product of our biological evolution. It is demonstrated by human preferences towards things in nature (such as the popularity of landscape paintings and posters), increased psychological wellbeing drawn from exposure to nature, and even our history of ornamental gardening that dates back to ancient times^{90 91 92}.

The idea is catching on. For example, the biophilic design movement is gaining popularity in architecture and urban design circles, recognising that people enjoy and benefit from contact with nature and, in some cases, will pay a premium for it. Perhaps this is the beginning of cities that look more like habitat for humanity.



Nature for health

The use of contact with nature to reduce the symptoms of ADHD is one example of how contact with nature can add to the slate of options for the management of health problems. Increasingly, the construction and renovation of health care facilities, such as children's hospitals, are considering the therapeutic potential of nature in planning their building and landscaping designs. Importantly, green spaces in health care facilities offer relaxation and psychological support for health care workers and the families of patients and visitors, not just the patients themselves. They help support the people who support and care for the patients.

The new field of horticulture therapy is also emerging, with specialist therapists facilitating patients in gardening activities designed to achieve certain therapeutic results. The attractions of therapeutic horticulture include its potential for both physical and psychological benefits and the avoidance of some of the side effects of other treatments. It can also be more cost effective than more expensive treatments, reduce recovery time and enhance other treatments. Here are some examples:

- One study examined the effect of window view on recovery rate in adults from gall bladder surgery. The results showed that those patients with a natural view from their hospital rooms recovered faster (as indicated by shorter post-operative hospital stays) than those in the control group. Also, the natural view group patients had fewer negative comments in the nurses' notes and reduced pain killer use⁹³.
- The horticultural therapy program at the Stephen D. Hassenfeld Children's Center for Cancer and Blood Disorders of New York University Langone Medical Center is designed to complement other treatment options and helps minimise potential challenges in the quality of life for patients and their families⁹⁴.

Nature in education

School is a logical place to apply some of the research findings on the benefits of contact

with nature. Given that much of this report has highlighted the importance of nature in childhood, that its benefits include better cognitive function and restoration from the fatigue caused by concentration, and that children spend a considerable amount of time at school, consideration should be given to the role of formal schooling in providing opportunities to gain the benefits of contact with nature. These considerations can be factored into planning curriculum, lessons and the development of school grounds. Research demonstrates both the benefits and attractions for children:

- A study of diverse play areas in an Australian school suggested that, when given a choice of different areas to play, **children choose natural areas**. The natural, green area attracted the highest number of students in total on average, compared with manufactured play equipment, paved sport courts, paved thoroughfare, canteen courtyard and mini oval⁹⁵.
- Green school grounds encourage greater light and moderate levels of physical activity by increasing "the range of enjoyable, non-competitive, open-ended forms of play at school. **Grounds are thus an important component of school health promotion initiatives.**"^{96 97}.



- School kitchen gardens provide an opportunity to connect with nature and learn about healthy eating, as previously mentioned.

Planet Ark has run a special day for schools – Schools Tree Day – as part of the National Tree Day initiative for many years. Schools Tree Day is a great opportunity for students and teachers to work and have fun in an outdoor classroom, incorporating hands-on activity with their studies of biology, studies of society and environment, and citizenship education. To support the achievement of learning outcomes, Planet Ark also offers a range of resources for schools, including lesson plans, games and activity sheets, online at: **TreeDay.PlanetArk.org/Schools**.

90% of Australians agree that contact with nature 'is good for children's wellbeing and development, but they don't know why.



ReLeaf – Reconnecting children with nature

The Planet Ark Nature and Children's Health Survey showed an overwhelming nine out of ten Australians feel that contact with nature has benefits for the wellbeing and development of children and 86% agree that kids are not spending enough time in nature. But there is a disconnect. While Australians agree that nature is beneficial, they don't know what the benefits are. We hope this report has provided some insight into these benefits and some inspiration for those caring for children.

At heart, this report is a call to action. We want carers to get children actively playing outside and reconnecting with nature. Health authorities recommend 60 minutes of physical activity (indoor or outdoor) per day for school-aged children. The Cancer Council recommends various levels of sunlight exposure (depending on the time of year) daily to support vitamin D production. **Planet Ark suggests a daily dose of 30 minutes of green time** that could incorporate exercise, family time and safe, moderate sunlight exposure as a way to promote the health of our children and reconnect them with the natural environment.

Planet Ark suggests a daily dose of 30 minutes of green time for children.





Help our children get their daily dose of green!

Here are some tips to get you started:

- **Remember, there are many shades of green – contact with nature is not ‘all or nothing’.** Few people have a pristine landscape on their doorstep; there are other options available.
- Nature views offer stress relief and other benefits. Think about the view from your child’s bedroom or the places secondary students do homework. Can these views have increased greenery?
- Caring for indoor pot plants offers a domesticated nature activity that can instill greener attitudes.
- Investigate the parks, walking trails and bike paths in your neighbourhood.
- Start a vegetable patch or herb garden at home.
- Keep track of your children’s screen time. Digital shower timers can double as screen time monitors.
- Be prepared to meet resistance. Children might say they prefer indoor activities. We also know they prefer to eat chocolate and stay up late!
- See if your child’s school has a kitchen garden or conservation program. If not, support them in getting one started.
- Get involved in community initiatives, such as National Tree Day and community gardens, particularly if you don’t have a garden. These initiatives often have the plants, the places to plant them, and the necessary tools and equipment.
- Wild nature activities, which can offer more powerful experiences, don’t have to happen every week to provide long-term benefits. Nature-based holidays are an ideal opportunity for once-in-a-lifetime nature-based experiences.



ReLeaf for adults, too

The good news is there's something in contact with nature for adults too. Most of the benefits to children of connecting with nature apply to adults. The Planet Ark Nature and Children's Health Survey found that about half of Australian adults have regular care of children and that adult carers are more likely to participate in outdoor activities than non-carers. In other words, kids help to reconnect us with the natural environment. As with children, this is good for our physical health, supports vitamin D production, provides interest and relaxation, and benefits our mental health too. Underlining this, research has found that people who do conservation volunteering in midlife (such as tree planting) are typically healthier, mentally and physically, 20 years down the track than those who don't⁹⁸. So it appears a daily dose of green has benefits for all stages of life.

*Kids help us to
reconnect with the
natural environment.*

Get Growing – Start with National Tree Day

The Planet Ark Nature and Children's Health Survey shows that 85% of people recognise that nature-based events like National Tree Day are a good way for kids to connect with nature and learn to value it. National Tree Day is Australia's largest tree planting and nature care event, where kids and their families can get outside and have fun. It's a safe day out for families, giving them the opportunity to do something positive for the environment with their local community. And by regularly revisiting the tree you planted, the veggie garden you are growing, or the spot where your seeds should sprout – you can make 'Every Day Tree Day.'

With thousands of sites at schools, parks, gardens and other locations across the country, National Tree Day and Schools Tree Day are the perfect first steps to providing Aussie kids and their families with their daily dose of green. It's just what the doctor ordered.

What are you waiting for? Dig in!

For more information about National Tree Day, visit [TreeDay.PlanetArk.org](https://www.tree-day.org.au)



Resources

Making outdoors a habit can be easy if you know how. Here's a list of simple ideas to try, adapt and add to. Many of them you can do in your own backyard. These groups and activities are suitable for kids of all ages, so join your children and get outdoors!

Community gardens – help provide fresh produce and plants, neighbourhood improvement, a sense of community and connection to the environment.

CommunityGarden.org.au

Nature Play WA – help families get together and enjoy the beautiful state of Western Australia and each other's company, and encourage kids to enjoy the benefits that unstructured outdoor play can bring. NaturePlayWA.org.au

Flora for Fauna – provides information on attracting wildlife to gardens.

FloraForFauna.com.au

Junior Landcare – encourages young people to play an active role in ensuring the safe future of their environment. JuniorLandcare.com.au

Nippers – enables children to become confident and have fun in a safe beach environment. For Nippers, the beach is the classroom.

sls.com.au/nippers

Girl Guides – is open to all girls and young women and aims to enable them to grow into confident, self respecting members of the community.

GirlGuides.org.au

Scouts – provides young Aussies, aged 6 to 25, with fun and challenging opportunities to grow through adventure. Scouts.com.au

Cancer Council Australia – see their fact sheets for Sun Smart advice on safe levels of sunlight exposure while outdoors. Cancer.org.au

Quirky Kid – this child psychology clinic has useful advice, resources and fact sheets for managing children's screen time, childhood mental health issues and managing ADHD.

ChildPsychologist.com.au

Green Stuff for Kids – this fun and informative book by environmentalist and former Planet Ark staff member Tanya Ha is a great resource for children and their teachers and carers, encouraging an interest in and care for the natural environment.



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