

Happiness grows on trees

How woodlands boost our wellbeing



Author: Jeremy Leach, Senior Researcher Woodlands.co.uk

Foreword: Professor Julian Evans OBE FICFor

Introduction: Nick Gibbs, Editor and Publisher of Living Woods magazine

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Preface

This report brings together existing research about the benefits to well-being of visiting woodlands and provides easy access to information sources about it. In addition, using new research, the report sheds light on the positive effects of activity in woodlands on physical and mental well-being and health.

The report has been created by Woodlands.co.uk, a private enterprise which specialises in selling to individuals who want to own woodland for conservation and enjoyment. It gives people interested in the future of our woods and forests a chance to become owners.



Foreword

Many of us enjoy visiting woods, and to own one is even better! But when asked why we enjoy woodlands we may not always be able to put our finger on precisely the reason - the great outdoors, fresh air, communing with nature, walking the dog, exercise, wildlife, even spiritual refreshment. Over the last twenty years increasing evidence has shown that our feelings about woodlands and the pleasure we find in them has a physiological and psychological basis, particularly in the areas of mental stress and, interestingly, recovery from surgery and illness. It seems that greenery, including woodlands, actually does 'do us good'.

This report assembles and reviews material in this area and presents findings from a survey of recent woodland owners. While the latter is limited in scale and in the strength of conclusions that can be drawn statistically, it adds much fresh evidence of the benefits woodlands and woodland owning have. This research usefully adds to our knowledge.

But should the benefits reported here surprise us? I think not. The enormous response two years ago to the mooted sale of public forests was evidence enough of a general appreciation that we want woods and forests to be around and be around for us to visit and enjoy. To know that they might even be doing us a bit of good too is a bonus. And this shouldn't surprise us either. At the very beginning of the Bible, in the second creation account in Genesis chapter 2, we find that only of trees, in all of his good creation, does God say they are 'pleasing to the eye'! Our aesthetic appreciation of trees, woods and forests was there from the beginning. Enjoy this report.

Professor Julian Evans OBE FICFor

Introduction - Trees Please

The axe is such a simple tool. Yet once, millennia ago, splitting wood to fuel fires that kept us alive must have challenged an unconscious understanding of biology, physics and chemistry, not to mention our strength and the emerging communication skills we used to learn and pass on the tricks of survival. The same must have been true for cooking, hunting, sewing and building shelters. Our improvement must have been so slow, century by century, and like all other animals, we came to be as one with our landscape, and especially the forests where we found food, fuel and materials.

So it should be no surprise that the environment on which we came to rely brings us so much comfort in a post-industrial world. Now, thanks to reports like "Happiness grows on trees", we are coming to recognise the intangible benefits of spending time amongst the trees, where once the rewards were so very tangible indeed. So many ages and types of people find succour and calm in woodlands, where they can spend time in contemplation, watch the wildlife or take part in this or that activity, perhaps stirring memories deep inside our DNA. It is intriguing to note that only the coast, as the authors found, increases our levels of happiness more than woodlands, perhaps because of links with childhood or because of the ever-moving nature of the sea, which is so obviously larger and more powerful than we are, in a God-like way. That coniferous woodlands raise happiness by nearly twice as much as broad-leaved, mixed woods should raise eyebrows, and perhaps stimulate a proper debate about the meaning of native forest.

It is a strange coincidence, or not, that just as life is being made so convenient by dishwashers, computers and unmendable cars, leaving us humans with nothing practical to do, mental health is suffering, just as this report describes. The symptoms are everywhere to be seen, and the problems are ever more costly for society, both in terms of treatment and lost opportunity. Out in the woods, away from gadgets and the TV, what Stoics once described as 'voluntary discomfort' reminds us to appreciate what we have already, while the woodlands provide us a place we instinctively call home.

It was an inspired idea of the authors to see the opportunity of producing this report alongside the Government's research into Happiness and Well-Being. In 2012 the Independent Panel on Forestry identified the need to nurture a woodland culture that values woodlands, forests and trees, and the many benefits they can provide modern society. Any evidence that helps reconnect people and woods is to be welcomed, and the authors are to be congratulated for producing a report that is both thought-provoking and useful.

Nick Gibbs

Editor & Publisher of Living Woods magazine

1. Executive Summary

This report looks in detail at the impact that trees, woodlands and forests have on well-being. We have brought together much of the research into the relationship between human happiness and woodlands. We have also conducted new research amongst the owners of small woodlands on the benefits of spending time in woodlands.

Governments around the world realise that the well-being of individuals and societies cannot be summed up by economic indicators alone. Increasing levels of depression amongst adults and children alike and the large numbers who are treated every year for mental health related problems are encouraging governments (with the UK at the forefront) to measure and understand well-being.

The strong links between woodlands and well-being are becoming better understood. While it has long been known that those who are physically active are happier, we now know too that physical activity is enhanced by an outdoors, natural and especially woodland setting. The sight of trees and woodlands can improve recovery rates for hospital patients. People's levels of happiness rise in a natural setting and the increase in happiness which people experience in a woodland setting is exceeded only by being on the seashore. Of course many more have easy access to a woodland than to the seaside.

Most startling is the effect of woodlands on child development. Much has been written about modern child development problems such as attention deficit and addiction to computer screens. Leading American writer Richard Louv termed this "nature-deficit" in his seminal book *Last Child in the Woods*. A number of organisations such as the No Child Left Inside Coalition have been formed to encourage children to spend more time outside and most especially in woodlands. In Europe, the Forest School movement which began in Scandinavia in the 1980s deliberately chose woodland settings for kindergarten and primary school-aged children. Now firmly established in the UK, research into pupils educated in Forest Schools has found that they are more capable socially, healthier, happier and concentrate better than students from a more urban environment.

The research we have done for this report amongst owners of small woodlands identified a number of positive attributes of spending time in woodlands. These included peace and tranquillity, spending time outside, solitude and doing physical work. These resulted in a sense of real relaxation and a sense of balance and perspective on their lives. The children who come along with them gain an unparalleled sense of freedom and discovery and a connection with nature and the outdoors.

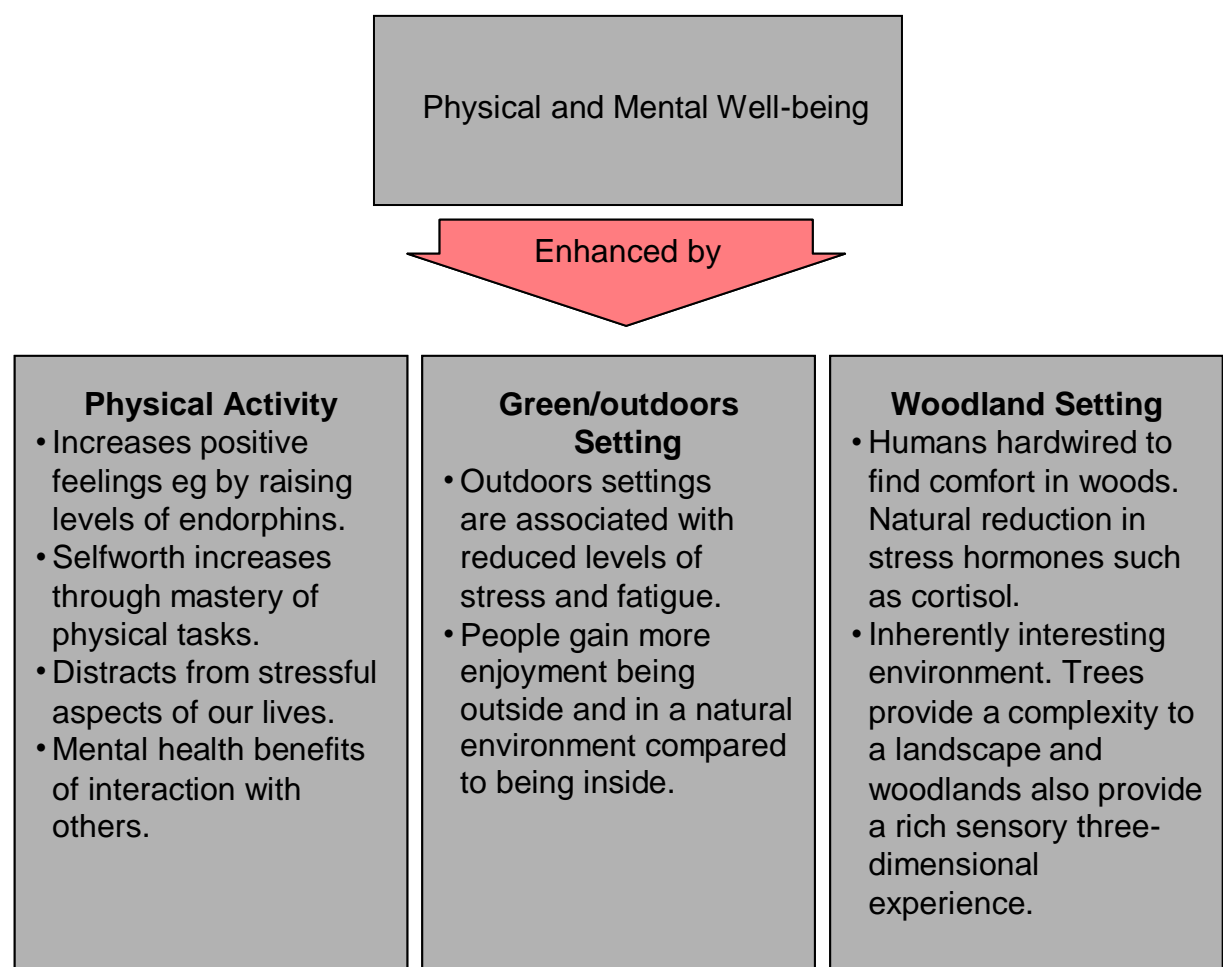
We believe that society needs to make more of the connections between humans and woodlands which were for so many generations part and parcel of our lives. We need to ensure that urban environments are improved wherever possible by trees. We need to encourage visits to woodlands by all and especially our children. Most importantly we all need to rediscover the benefits to our sense of well-being that trees and woodlands can offer.

2. Summary

2.1. How Woodlands Can Address Problems with Well-being in the UK

As a society we struggle to maintain well-being. Along a spectrum that runs from anxiety, depression to mental health problems, high numbers of adults and children struggle with physical and mental well-being, meaning and happiness.

Research over the past 20 years has shown that both physical and mental well-being can be improved significantly by physical activity. Our research has found that well-being improvements are further enhanced by undertaking activity in a green or natural setting and that a woodland setting enhances it still further.



Linked closely to this idea of enhanced benefits of activity in woodlands and forests are the special powers that they have. Woodlands work in surprising ways to help maintain and restore our well-being. Examples of this are:

- Simply viewing trees or woodlands improves the recovery rates of patients in hospitals.
- Being in a woodland helps raise our level of happiness. Among the range of natural landscapes only shorelines/the coast and mountains and moors have a comparable capacity to lift our mood.
- Our motives for visiting woods are bound up with improving well-being. Aside from the practical motive of dog walking, most of the leading reasons for visiting a woodland are closely linked to well-being. Leading motives include “for health or exercise”, “to relax and unwind” and “for peace and quiet”.

2.2. Woodlands and Child Development

Remarkable work has been done in recent decades in understanding how children benefit from a strong interaction with nature and in particular woodlands. There are two main strands to this:

1. From the US, comes the idea of children suffering from “nature-deficit” and the demand for children to have far greater access to nature and woods. A major influence on this movement is a book from 2005 called *Last Child in the Woods* by Richard Louv which linked “nature-deficit” to rising rates of obesity, attention disorder and depression.
2. The creation and rise of Forest Schools. Originating in Scandinavia in the 1980s, Forest Schools have pioneered the principle of children playing and learning in an outdoors environment. Being trusted with materials and tools and learning about risk through natural play in the outdoors, forest schooled children were found to be happier and to interact better than children in an urban kindergarten environment as well as being far less prone to sickness or poor concentration.

2.3. Woodlands and Mental Health

These inherent benefits of woodlands for improving well-being have also made them natural locations for mental health projects. The combination of the naturally calming and restorative environment coupled with opportunities for physical work (eg path making and maintenance) and the acquisition of skills (eg carpentry) ensure that woodlands have been used for a wide range of projects including art therapy, woodland management and dementia treatment.

2.4. Proving the Link

Whilst many of the studies into woodlands and well-being have been more qualitative in nature, studies have also attempted to quantify these benefits. For example, the study into different levels of happiness in various natural environments used an innovative methodology involving texting participants and asking them to rate their level of happiness at that given moment. GIS mapping was used to pinpoint where they had been when they gave the score. This enabled a link to be made between the landscape and its influence on their mood.

Research specially commissioned for this report has made use of the UK government's newly devised research into well-being to investigate whether there are any differences in levels of well-being between those who own small woods and the population average. We have discovered that the average well-being scores for woodland owners are higher than the population average. Even more intriguing is the finding that the well-being scores of those who have enquired about owning a wood is lower both than those for owners but also the population average. This may show that owning a woodland leads to increased levels of well-being owing to a higher frequency of visits to a wood and the activities people can undertake in them. It may also indicate that those seeking to own a woodland have an unfulfilled yearning for meaning and connection with nature in advance of owning a wood AND that that yearning is fulfilled by actual ownership.

Figure 1. Table showing the average scores (out of 10) of 3 groups – Owners of small woodlands, Enquirers/Potential owners and the UK Population average (the question asked exactly matched the UK government methodology in its well-being research).

Scores out of 10 where 0 is 'not at all...' and 10 is 'completely...'	UK Pop'n Average	Woodlan d Owners (n=40)	Enquirers (n=324)
Overall, how satisfied are you with your life nowadays?	7.41	7.98	6.94
Overall, to what extent do you feel the things you do in your life are worthwhile?	7.66	7.90	7.11
Overall, how happy did you feel yesterday?	7.28	7.50	7.17
Overall, how anxious did you feel yesterday?	3.14	3.13	3.06

Other questions that owners of small woodlands were asked have backed up strongly the research studies reported in this study:

- 93% agreed that owning a woodland has made them a happier person.
- 93% agreed that spending time in their wood helps them cope with the stresses of the rest of their life.
- 83% agreed that owning a woodland has helped them be physically fitter.

The comments of these owners also strongly supported the themes of woodlands being places of peace, tranquillity and solitude and the benefits of being outside and being able to engage in physical work. From these elements flowed the other improvements such as becoming more relaxed and gaining a sense of balance and perspective in their lives.

Woodland owners also saw that the children who accompanied them gained a sense of freedom and discovery that was unknown in an urban setting and brought them into contact with nature. These elements allowed them to be free range and to test and discover more about their own personal limits. This strongly echoes the findings of the Forest Schools' research and the positive impact that woodlands have on children and their development.



3. Background

The United Kingdom is a highly urbanised society. Around 80% of us now live in urban areas (1) and towns and cities continue to strengthen their grip on our society as both the creators of its wealth and the magnets for cultural and leisure activities. This concentration towards urban living represents an enormous shift in our society since the start of the Industrial Revolution when (in 1800) under a quarter of the UK population lived in a town or city.

As we have become used to living in an urban setting, however, many people have lost touch with the countryside and these more rural roots. Almost half of us (49%) visit a woodland (2) less often than once a month and more than a quarter (28%) say that they never visit a woodland.

Our report has tried to find out more about the impact of this move from a society that 200 years ago was inherently rural to one where many have little or no connection with woodlands and forests. We have looked at the research which has been undertaken into the role that contact with nature and woodlands in particular can have on our sense of well-being. Well-being is itself being considered in ways that have been neglected up to now with the current UK government creating measures of society that go beyond the purely economic and encompass both happiness and the value of our lives.

We will see how woodlands are being increasingly viewed as having particular properties to improve well-being and as settings that can be both nurturing and uplifting for people and most especially children.

Finally we look at new research commissioned for this report which explores differences in well-being between those who have frequent access to woodlands (as owners of small woodlands) and the general population and to understand in more depth precisely what people gain from spending time and undertaking activities in a woodland setting.

We would particularly like to thank Lily Horseman, Forest School trainer/practitioner for her help with the impact of woodlands on children and their development. We would also like to thank the Small Woods Association and its Small Woods – Branch Out Project, the staff and pupils of Rake Primary School in West Sussex and St Mark's Primary School in East Sussex and Margaret Hanton for use of photos that they have taken.

Links to the references which appear as numbers in brackets (eg (1)) are listed in section 8.

4. The Well-being Deficit in our Society

There are many indicators which illustrate just how we struggle as a society to maintain a sense of well-being. Problems manifest themselves throughout the spectrum from being happy through to the deeper manifestations such as depression and poor mental health.

- When asked how anxious were you yesterday (as part of the UK government's well-being research) more than a fifth (22%) rated their anxiety as very high (3).
- Almost a third (29%) of adults report sleep problems (4).
- 1 in 4 people will experience some kind of mental health problem in the course of a year (5).
- Self-harm statistics for the UK show one of the highest rates in Europe: 400 per 100,000 population (5).

Children and young people are particularly vulnerable to these issues (6):

- Nearly 80,000 children/young people suffer from severe depression.
- 1 in 10 children and young people aged 5 – 16 (three children in every class) suffer from a diagnosable mental health.
- Between 1 in every 12 and 1 in 15 children and young people deliberately self-harm and around 25,000 are admitted to hospital every year due to the severity of their injuries.

These issues impact directly on our usage of and costs of our health services in the UK (4):

- In Britain, at least 1 in 6 people suffer at any one time from mental health problems at any one time.
- Mental health-related problems produce 230 out of every 1,000 consultations in primary care services.
- The treatment of mental illness in England requires annual NHS expenditure of £3.8 billion and personal social services expenditure of £0.68 billion.

Dealing with these issues is on the rise. Mixed anxiety and depression represents the most common form of mental illness, and the prevalence of these conditions in Britain increased from 7.8% in 1993 to 9.2% in 2000 (4).

In recognition of the importance of the need to judge our performance as a nation against more than just economic criteria, the UK Government has begun to measure well-being and happiness (7) in order to *“provide a more coherent measure of 'how the country is doing' than standalone measures such as GDP”*.

5. The Link Between Well-being and Activity

What, then, are the determinants of well-being and what roles can nature and the outdoors play in helping to improve it?

There is a strong link between physical activity and good or improved well-being. Physical activity (as opposed to more formal exercise) is linked to individuals being (8):

- less likely to be depressed, anxious or tense
- more likely to feel good about themselves
- more likely to concentrate and focus better
- more likely to sleep better
- more likely to cope with cravings and withdrawal symptoms if they try to give up a habit such as smoking or overcoming alcohol
- more likely to be able to keep mobile and independent as they get older
- (possibly) less likely to have problems with memory and dementia.

Physical activity has both physical and psychological benefits which work in the following ways, either singly or in combination (9):

- **Biochemical and physiological:** improved mental health is linked to increased core body temperature and increases in levels of endorphins.
- **Mastery:** effects are linked to increases in self-worth and personal control that come with the mastering of new physical activity tasks.
- **Distraction:** positive outcomes are associated with the tendency for physical activity to take us away from stressful parts of our lives.
- **Social interaction:** mental health benefits can arise from the collective experience of being active as/within a group.

6. The Special Role Woodlands Play

As we will go on to see, the benefits of activity and exercise are magnified when undertaken in an outdoors setting and when undertaken in a natural environment such as in a woodland. So what is it about woodlands that might confer these additional and almost unconscious benefits? It would appear that these divide into the physical, the physiological and the psychological.

- **Physical.** Some stress the connection of humans with woods and trees throughout almost all of our evolutionary process (10) and contrast this with the innate stress of a modern and more urban society. *“Given the deep-seated connection between the natural world and humans... it should be natural for humans to feel a sense of comfort or affinity with the natural environment...and that living in our modern “artificial” society is inherently stressful”* (10) - Introduction).
- A recent study by Forest Research (11) emphasised many of these physical aspects of the benefits of woodlands and forests as including:
 - The size of trees provides complexity to a landscape, and a contrast to the urban environment.
 - Woodlands provide a rich sensory 3 dimensional experience.
 - Contact with the natural environment is enhanced in woodlands as people have the opportunity to use natural materials - den building, gathering non-timber forest products.
 - Trees are important markers of time.
- **Physiological.** These well-being benefits also appear to be rooted in positive physiological changes that our bodies undergo when exposed to trees and woodlands. We will look at this in more detail later but underpinning these benefits are falls in stress hormones (cortisol) when people are surrounded by trees and, when people actively work in woodlands, an increase in the production of endorphins which can bring with it a sense of achievement and pleasure.
- **Psychological.** There is also of course a profound psychological relationship between humans and trees and woods. This is recognized in numerous forms such as the frequent reference to woods and forest in literature from fairy tales such as Grimm's Fairy Tales, Hansel & Gretel and Snow White through to more modern books such as The Lion, The Witch and the Wardrobe or the Harry Potter stories and the Forbidden Forest.
- Woods and trees have also held significance in psychotherapy with the Herder Symbol dictionary (12) stating that *“Psychoanalysis sees in the tree a symbolic reference to the mother, to spiritual and intellectual development, or to death and rebirth.”* Carl Jung saw the rich symbolism of trees both in terms of the frequency of their appearance in dreams and the diversity of their role as a symbol. *“A tree is one of the best examples of a motif that often appears*

in dreams (and elsewhere) and that can have an incredible variety of meanings. It might symbolise evolution, physical growth, or psychological maturation; death (Christ's crucifixion on the tree); it might be a phallic symbol; it might be a great deal more." (13)

"In a woodland there is a feeling of being amongst other things. A field is outside but is often windswept and you are not amongst other things. In a wood there is a sense that you are joining a community, you are joining something else. You feel that trees have presence; you can see their history they are have scars on them, the way they grow to take account of the trees around them. They are not a human construct like in a field or a city. Woods seem to have their own character."

Lily Horseman Forest Schools

We can see that activity is good for us and that physical, physiological and psychological dimensions can enhance these effects.

So, armed with this knowledge, in what ways are woodlands being used to address the well-being deficit which we identified earlier? We will now look at a number of surprising examples which underscore just how deep-rooted our human need for trees and woods is and the restorative powers they have.

A. Even the sight of woodlands/trees is beneficial to us

- **Feeling Good.** Trees, woodlands and green spaces make us feel better (14). Many studies and literature reviews from countries such as Australia, Japan, the Netherlands, Norway, Sweden, the United Kingdom and the United States have outlined the contributions of trees, woodlands and green spaces to people's overall health and well-being. Studies have shown that benefits can be gained not only by being active in nature (e.g. walking or cycling), but also by viewing nature, for example from a window, or being near it in the course of everyday activities. (15)
- **Improving Recovery.** Trees and woodlands can improve the recovery rates of hospital patients; even a view of trees or a wooded landscape has a positive impact on the rate of recovery. Work by Ulrich in 1984 demonstrated the speedier recovery of hospital patients who had a view of trees from their hospital window as opposed to those who had a view of other buildings (14).

B. Quantifying the benefits of different natural environments

- Researchers have also tried to quantify the benefits to well-being and happiness that different natural environments can confer. In a study from 2011 entitled Mappiness (16), respondents were asked to report how happy they were (on a scale of happiness of between 0 and 100) at a given moment. As this information was relayed via a smart phone, their location could be identified at the moment they responded and thus the land use of that location identified. We see from the table below that being in coniferous woodland is associated with an increase in a person's score of over 4 points and being in broad-leaved/mixed woodland with an increase of over 2 points.

Figure 2. Relationship between levels of happiness and type of land cover.

Type of land cover when outdoors	Increase in level of happiness* on a scale of 0 (low happiness to 100 (high happiness))
Marine and coastal margins	5.15
Coniferous woodland	4.53
Mountains, moors, heathland	4.00
Broad-leaved/mixed woodland	2.28
Enclosed farmland	2.14
Freshwater, wetlands, flood plains	1.74
Semi-natural grasslands	1.22
Suburban/rural developed	0.96
Inland bare ground	0.16

(* when compared to level of happiness from a base of being in an urban environment (eg raising an individual's score of 60 in an urban environment to 65 in a seaside one))

C. Being active (eg walking) in woodlands is good for your health and sense of well being

- **Natural Environments.** A study by Kaplan in 2005 (14) notes that natural environments have a particular role to play in helping restore and rebalance people emotionally. Nature itself is *"endowed with fascinating objects and effects such as clouds, sunsets, the motion of leaves in a breeze and they hold our attention without requiring any effort from us"*. Natural environments have an unconscious capacity to improve well-being and have a restorative effect mentally.

- **Well-being is a key motivator for visiting woods.** Recent research by Natural England through its Monitor of Engagement with the Natural Environment (17) shows how strongly motivations that are associated with well-being stimulate people's visits to woodlands and forests.

Figure 3. Motivations for visits to woodlands and forests.

Motivation for Visiting a Woodland/Forest (motives directly related to well-being are shaded)	% of visitors motivated by this reason
To Exercise Your Dog	64%
For Health Or Exercise	44%
To Relax And Unwind	35%
For Fresh Air Or To Enjoy Pleasant Weather	34%
To Enjoy Scenery	34%
To Enjoy Wildlife	30%
For Peace and Quiet	24%
To Be Somewhere You Like	21%
To Spend Time With Family	15%
To Entertain Children	12%
To Spend Time With Friends	9%
To Learn Something About The Outdoors	6%
To Challenge Yourself Or Achieve Something	6%

- **Better than shopping!** A study by the University of Essex amongst groups of people suffering from depression found that amongst one group of patients who took a walk in the park, 71% reported feeling less depressed as a result. This compared to members of the other group whose members walked round a shopping centre where a lower figure of 45% felt less depressed. Of those who walked round the shopping centre, 50% reported increased tension and 44% reported feelings of reduced self-esteem (18).

Shrinrin Yoku – Taking in the Forest Atmosphere.

Japan is one of the world's most densely forested countries and trees, woods and forest have always had a special significance (19) in the national psyche. "Shrinrin-yoku", which is known as "taking in the forest atmosphere" or "forest bathing" works from the premise that people who spend time in nature, and specifically in woods, feel better, more relaxed and more energized.

More recently, studies have tried to quantify these benefits and establish more precisely the physiological effects of spending time in a forest. Studies (10) have identified that being in woodlands and forests produced "lower concentrations of cortisol (a stress hormone), lower pulse rate, and lower blood pressure."

D. Undertaking exercise in woodlands enhances its benefits

- The study titled A Countryside for Health and Well-Being: The Physical and Mental Health Benefits of Green Exercise (Feb 05) (20) found that when assessed against nine other green exercise activities (eg canal boating or mountain biking) woodland activities scored highest in relation to improving self-esteem and in improving scores on the “confusion – bewilderment” mood measure and close to the highest score in a number of other categories including reducing “anger – hostility” and “depression – dejection” mood measure scores.
- More recently, this link between outdoors exercise and improved mental health was underscored by a study by Glasgow University (21). The study found that 16% of those who did not exercise regularly outdoors were likely to suffer poor mental health compared to just 8% of people who exercised regularly in green spaces. Outdoor exercise had a positive effect on biomarkers, which indicate levels of stress and fatigue that was absent from the exercise undertaken in the indoor gym.
- **Being in the woods is more important than the exercise.** Studies by O’Brien (in 2004 and 2005) (22) determined that when exercise is undertaken in a woodland setting, the greatest benefits in reducing stress levels is the impact of the setting itself. While the physical exercise people undertake as part of their use of woodlands is important, it is often the emotional and mental well-being conferred by the setting that has the greatest effect rather than the physical activity itself.

E. Woodlands and child development

Woodlands are increasingly being chosen deliberately as a setting for activities with children and to promote child development. A wide range of projects now enable children to spend time in woodlands and forests.

Nowadays childhood can be far from the free range experiences that many recall from when they were young. Urban living and busier and more constrained lives can hinder many children from ever visiting a wood whether in a town or in the countryside. Initiatives have been developed to address this, however.

The Growth of Forest Schools

Much of the thinking about this issue has emerged from the development of Forest Schools which originated in Scandinavia.

- (23) The Forest Schools concept was established in Denmark for pre-school children (under seven years) in the 1980s. It was recognised that this 'outdoor' approach to play and learning could have a huge impact on the normal development of children.
- A 13 month long study carried out in Sweden on children from similar backgrounds found that children attending Forest School kindergartens in the countryside environment are far happier than children in kindergartens located in the urban environment. The study concluded that children in the Forest School are more balanced with greater capability socially; they have fewer days off sick; they are more able to concentrate and have better co-ordination than the city kindergarten children (23).
- The first Forest School in the United Kingdom started in 1994. While there are now hundreds of Forest Schools in the UK, many mainstream schools are also seeing the benefits of forest school activities and incorporating them into their curriculum.

CASE STUDY. The following case study comes from a teacher at a Forest School about a little girl in Bradford, West Yorkshire.

"There was a 3 year old from a south Asian family. She had never walked on uneven ground in her life and never on a natural surface. She was in the woods for the first time. She seemed lost at first but by the fourth week of coming, she found this old tree stump and that unlocked her and suddenly she became a more physical person. She found loads of ways to climb and use the saplings and was interested in collecting sticks. Her teacher said that she then changed in the nursery she went to and when she saw leaves falling she started to collect them. It really transformed her levels of confidence."

Children and “Nature-Deficit”

This focus on children and their loss of access to nature and its effects was the subject of an influential book from 2005 by Richard Louv called *Last Child in the Woods* (24). The book linked the lack of nature in the lives of today's “wired” generation which he termed “nature-deficit”, to some of the most disturbing childhood trends, such as the rises in obesity, attention disorders, and depression. He outlined a body of research which indicated that direct exposure to nature is essential for healthy childhood development and for the physical and emotional health of children and adults.

As a response to this a number of groups have been established. In the United States, the Children & Nature Network draws together regional activities, initiatives for families and Get Outside events across the country promoting arguments for and events to encourage greater interaction with nature by children.

When we crossed the stream into the woods, people's energy levels changed, everyone was excited to be in a bigger more flexible space." "It is only a little strip of woodland but it changes the atmosphere so dramatically." Lily Horseman Forest Schools (25)

The ‘No Child Left Inside Coalition’ (26) was formed in 2007 to alert Congress in the United States and the public to the need for schools to devote more resources and attention to environmental education. It is a coalition of 2,000 business, health, youth, faith, recreational, environmental and educational groups which is working to support legislation which ensures that every student achieves basic environmental literacy.



Child Development problems – the role for woodlands

A number of studies have been undertaken to see how initiatives which involve greater interaction with nature can help address the child development issues which are appearing in greater numbers such as obesity, attention disorders and depression.

- A study by the University of Illinois found that exposure to ordinary natural settings in the course of common after-school and weekend activities may be effective in reducing attention deficit symptoms in children (27).
- Schools that use outdoor classrooms and other forms of experiential education produce significant student gains in social studies, science, language, arts and math (28). One 2005 study by the California Department of Education found that students in outdoor science programs improved their science testing scores by 27 percent.

"The atmosphere of the woods also had a calming influence on the group, they stopped to listen to the different noises and felt the need not to fill gaps of silence, carrying on with tasks."

A Forest School training participant on working with young people who were taking part in an intervention programme (as quoted by Lily Horseman of Forest Schools)

F. Woodlands as the setting for treatments. Many mental health treatment projects are also being undertaken in a woodland setting. Some are existing therapies (such as art therapy) which are enhanced by being undertaken in woodlands. Others are specifically designed for the ways in which they can incorporate the benefits that woodlands activities specifically offer. These include:

- Woodland management – cutting down trees, clearing paths.
- Learning about nature (animals and insects, wildlife and trees).
- Physical labour – digging.
- Gaining skills – carpentry (eg making benches).

Some examples of projects which combine woodlands and mental health initiatives include:

- **Art Therapy.** The Cannock Chase Route to Health Project created an outdoor community arts trail (14) which established a one mile walk through Cannock Chase with temporary and permanent artworks displayed along the route to add interest for everyone who walks along the trail. Those who have participated in creating art for the trail include adults with both physical and mental health difficulties, young children who are at risk from social exclusion and patients at a mental health rehabilitation unit.
- **Woodland Management.** The Argyll & Bute Hospital has brought the Blarbuie woodlands surrounding the hospital back into use after years of neglect. Both the process of restoring the woodlands and the subsequent usage of it has had significant mental health benefits for participants (29). One former inpatient described the benefits *“Cutting down old trees, designing the paths, the activities made me feel great and needed. It had a great effect on my sense of well-being. I experienced peace and loved learning new things about animals and insects, wildlife and trees. I really loved being in this environment and would recommend it for others.”* In addition to the physical and mental health advantages of practical woodland management, other benefits included:
 - The creation of a refuge / place of safety and tranquillity for those visiting the hospital
 - Reduced suicidal and self-harm tendencies amongst mental health service users as a result of involvement in the project.
- **Dementia.** The charity Dementia Adventure in conjunction with the Woodland Trust has combined these benefits of being outdoors in green space and woodlands with the needs of those experiencing dementia for stimulation, contemplation and restoration by organising visits to woodlands for those living with dementia, their carers and family and friends (30).

7. New Research.

Woodlands.co.uk has attempted to test some of these issues relating to the impact of access to woodlands amongst owners of small woodlands. We wanted to learn more about the benefits that we have outlined in this report and to see if they hold true amongst the many owners of small woodlands that we are in touch with.

We also explored what effect owning a woodland and working in it has on well-being. As well as asking owners to describe the impact of owning a woodland, we have also quantified these effects and made use of the measures recently introduced by the UK government to understand well-being on a national level. Before looking at the results, we provide a little background about the UK government's innovative approaches to understanding and measuring well-being.

UK Government Research into Happiness and Well-being

Background

The UK Government has begun to recognise that traditional economic measures alone are not sufficient to reflect a nation's overall progress or well-being (31). There has been increasing interest in the UK and around the world in using wider measures of society and the environment to monitor well-being and evaluate policy, alongside the already well-established economic measures.

The UK Government via the Office for National Statistics (ONS) has begun to collect both subjective and objective data on individuals' views of their own well-being.

In April 2011, the ONS included subjective well-being questions for the first time in the constituent household surveys it uses to take measures of issues in the UK. Sample sizes for these surveys are very large (165,000 adults aged 16) and making use of such a large sample size allows detailed investigation of sub-groups of the population.

The following four monitoring questions were included:

- Overall, how satisfied are you with your life nowadays?
- Overall, to what extent do you feel the things you do in your life are worthwhile?
- Overall, how happy did you feel yesterday?
- Overall, how anxious did you feel yesterday?

All were answered by respondents using a 0 to 10 scale where 0 is 'not at all' and 10 is 'completely'.

The development of the survey questions had involved academics and members of the National Statistician's Measuring National Well-being Advisory Forum and this led us to have confidence in this methodology for identifying subjective assessment of well-being.

We then asked exactly the same questions that the government is now using as part of a wider survey of two groups. The first and smaller group were members of the Small Woodland Owner's Group (40 respondents) and the second were those who had made enquiries to woodlands.co.uk about their interest in buying a wood and who had provided an email address for contact purposes (324 respondents).

We are aware that we need to be cautious with these results as sample sizes of owners are relatively small and owners have a distinctive demographic profile (male (75%), relatively affluent and middle aged (average age is 55.1) and living in the south-east of England). From the UK government research we know that a higher social grouping and living in the south-east tends to boost happiness scores, being male and in particular being middle aged tends to depress them. On balance these factors appear likely to cancel each other out in relation to this woodland owner group.

The Research Findings

The findings show small but consistent differences. The owners of small woodlands have higher than average well-being scores in relation to each of the three 'positive' attitude statements and the enquirers have lower than average scores.

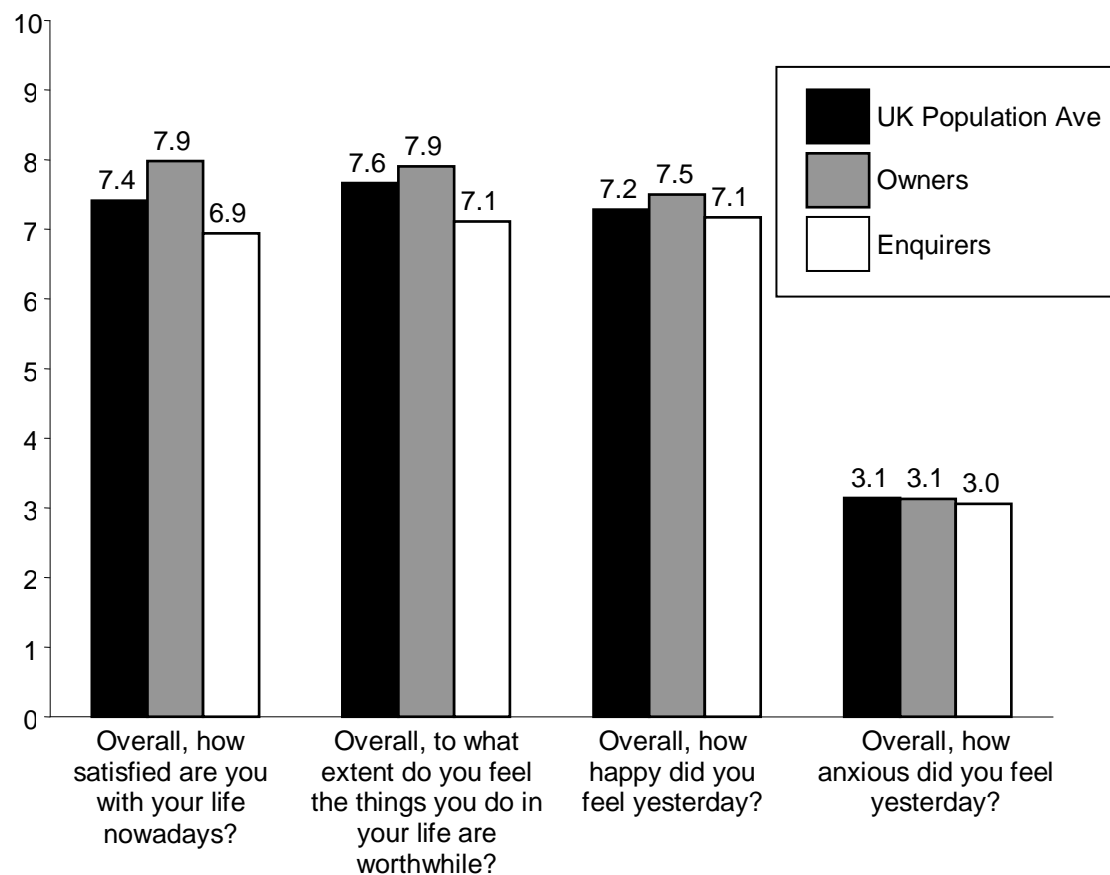
The scores for the two statements about "how satisfied are you with your life?" and "to what extent do you feel the things you do are worthwhile?" were remarkably similar with owners' scores averaging 7.9 (out of a possible 10). The UK population score averaged 7.5 and the enquirers 7.0. For the statement "how happy did you feel yesterday?" all scores were slightly lower but showed a similar pattern with owners averaging 7.5, the UK population 7.2 and enquirers 7.1.

In the final statement which is put in a more negative way "how anxious did you feel yesterday?", there was little or no difference between the 3 groups with owners scoring the same as the UK population average (3.1) and enquirers 3.0.

Owners appear to have scores that are a) higher than the population average and b) markedly higher than those of the enquirers. Enquirers have average scores which are lower than the population average. As we have seen, it is unlikely that these differences are explained by demographic factors; in particular the profiles of the owners and enquirers are likely to be very similar.

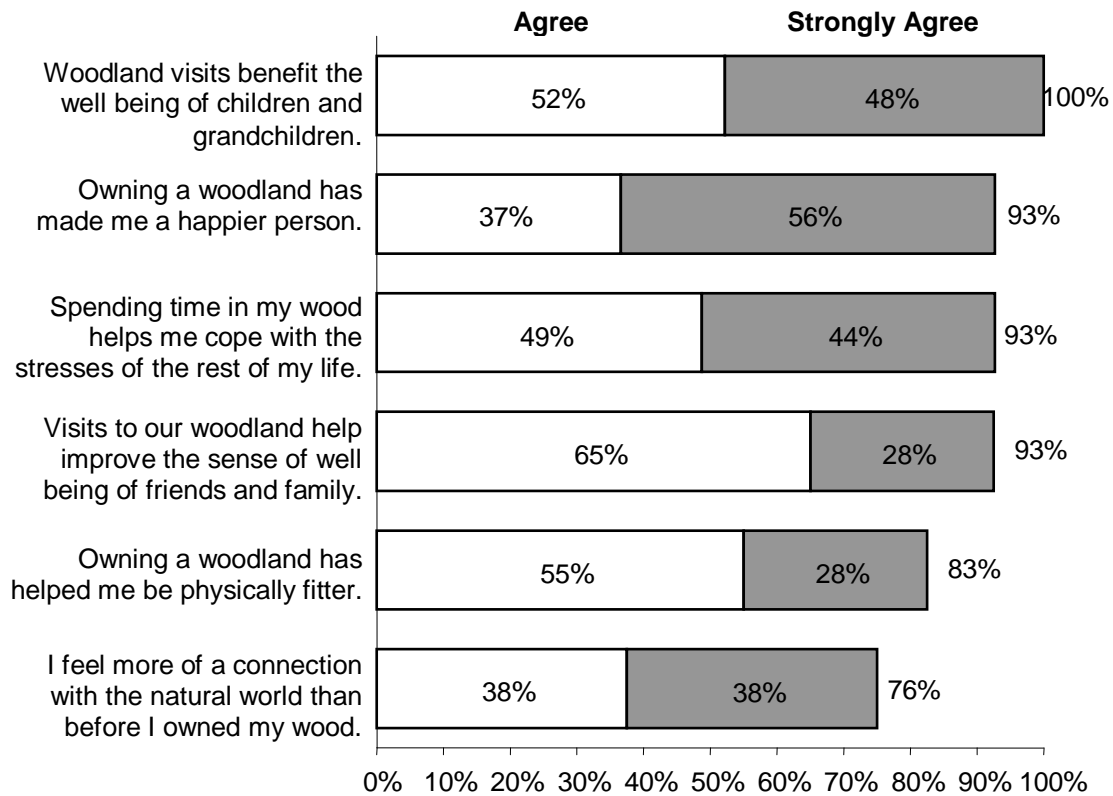
The survey results provide evidence that woodland ownership does contribute to higher levels of well-being. We suggest too that, on the basis that the demographic profile of owners and enquirers is broadly similar, enquirers are (whether consciously or unconsciously) seeking an outlet to improve their sense of well-being and meaning in their life. It seems that when they find it, in the form of owning a woodland, they find a satisfaction that they lacked and it serves to complete their life in some way.

Figure 4. Comparison of the Mean Scores in relation to the Questions about Well-being Between Representative Sample of the UK Population, Small Woodland Owners and Enquirers (Scores out of 10 where 0 is 'not at all...' and 10 is 'completely...').



- In addition to these questions which replicated the UK Government's research into well-being, we also investigated the ways in which woodland ownership might contribute to physical and mental well-being. Those who own woods have extremely high scores for the restorative effects of presence in woodlands and its impact on personal happiness.

Figure 5. Level of Agreement with Statements About Woodland Ownership (Woodland Owners).



Owners were asked about the well-being benefits of being a woodland owner; the effects described chimed very closely with those we have seen mentioned earlier from the more academic studies.

The benefits mentioned flow from a number of attributes of the woods:

1. Peace and tranquillity. Woodlands are a unique environment which are both inherently interesting and also extremely peaceful. They allow people to be in a personal space that is not available in other parts of their lives.

“The biggest thing is that it gives time and space to enjoy the beauty of nature in peaceful surroundings.”

“Woods are special places offering a kind of peace not felt in another environment. Going to my wood gave me a sense of being at peace and at one with everything.”

“There is so much to observe, to watch, to listen to, so much to learn by just being there and sitting still.”

“Every time I feel I'm going on holiday. I get an enormous sense of peace and tranquillity and find the pace of life slows down and time goes much more slowly.”

2. Being outside. In their wood, people have a relationship with nature and the natural world which stems from being based outdoors. They observe the seasons and watch nature in a dynamic and active way that is normally not available.

“Watching the buzzards and occasional goshawk as one works is amazing. My normal job is in an operating theatre with no windows.”

“We love to work, rest and play in our woods and we look forward to the changing seasons.”



3. Solitude. People enjoy being apart from others and the chance to be alone. They enjoy being in charge of how they spend their time and gain too a sense of belonging from being in their own spot in the English countryside which they can count as their own.

"I enjoy spending time in the woodland because I enjoy being away from people."

"It's a chance to chill out, switch off and work at my own pace to my own rules at my choice of time."

4. Doing physical work. Engaging in practical tasks gives both a sense of physical accomplishment and a fatigue born of physical rather than mental exhaustion. In addition owners are fulfilling their own particular creative urge and can gain skills and lead a life that is in contrast to their customary principally urban life with (like children) the freedom to experiment with danger such as fires and falling trees.

"I enjoy managing the woodland, deciding which areas to work on."

"It provides a space where I can get away from day to day issues and distractions and either just relax or concentrate on the more physical acts of woodland management. After either of these I feel calmer."

"Seeing the increase in wildlife following the reintroduction of a coppice cycle is amazing, to know our ownership brought this about is such an achievement."

Either singly or in combination, these offer the following benefits:

1. Relaxation. This is the expression used by owners most frequently and is often mentioned as a contrast to the rest of their busy lives. While the wood may serve simply as a location for outdoor activity, there is also a sense that the trees themselves confer their own benefits.

"Allows me to relax and concentrate on things that really matter in the world."

"An ability to potter around outside, away from home and work helps me relax."

"(Come back) More relaxed and fitter."

"Relaxation and detachment from daily stresses by being among living trees."

2. Balance. The relaxation affords people a greater sense of balance in their lives and a calmness that they can then take back into the “real” world.

“I am balanced and relaxed after my weekly visit (to my woodland).”

“Helps me to be calmer in the real world.”

3. Perspective. Being in a wood offers a chance to review the state of their life and its meaning as well as gain a sense of perspective of a person’s place in the world and the significance of their life.

“Being involved in Real Growth is good for you. Watching an entire wood grow is a profoundly humbling experience.”

“My wood is (and feels) very ancient (from 1200 AD), which gives me a real sense of inheriting its history and a desire to manage it well.”

4. Fatigue from exercise. Physical work makes people fitter and leaves them with a sense of tiredness that is different from the feeling of mental exhaustion they tend to have at the end of their normal working day.

“After a day in my woodland the benefits are clear ... I may be exhausted and in need of a rest but I have re-connected with the “real” world and always can see something real that I have achieved.”

“Owning our own woodland definitely helps our physical fitness as we are constantly active, doing both light working and heavier management tasks.”

Children

Owners were also asked to describe the impact of being in woods when children or grandchildren accompanied them and the effect of being in woods on children.

Once again there is a strong correlation between the comments that our respondents gave to the aims of Forest Schools and the movements in the US such as the Child & Nature Network. Adults sensed that there were strong themes around freedom and discovery and a lack of supervision. Of interest was the belief amongst a small number that being in a wood gave space for fantasy and a connection with the long-established role woods and trees play within the human psyche.

1. Freedom. Echoing the view of Forest Schools that the classroom environment is inherently stressful, there is a sense, from the comments which parents and grandparents made, that being in a wood fits well with the natural state of being a child. Children have an enormous sense of freedom.

“Freedom to roam, play and experiment.”

“...fun, a sense of excitement, of discovery, and wonder, plenty of fresh air and freedom.”

2. Discovery. For children, woods are a location for spontaneous discovery both about themselves, testing what is safe and what is possible, and acquiring new skills for example through using tools and building shelters.

“...learning about nature, getting fresh air, keeping fit and energised, having fun, learning to be careful and mindful.”

“It toughens them up no end and is a safe place to burn energy, explore and experiment and learn new skills.”

3. Nature & the outdoors. Parents and grandparents very much emphasise the connection that children make with nature.

“The appreciation of 'hands on' woodland work and enjoyment. Fresh air and in being touch with nature.”

“Enjoying outdoors, exercise, exploring the natural world close up through the seasons... very different from their everyday urban environment.”

4. Free Range Children. Being in the woods is a chance for children to run free without being supervised. Once again, for most children living in a more urban environment, this is an unusual experience.

“A chance to get dirty; develop self preservation and personal risk assessment; problem solving skills.”

“The chance to run around and not be constantly watched or controlled will be the biggest attraction to them.”

“Freedom from parental control, children and dog disappear off - no idea where to. Can't happen anywhere else.”



5. Fantasy. Children have a chance to engage with the more elemental and psychological overtones of trees, woods and forests. Woods offer a rich canvas on which children can develop their own stories or sculpt play from stories they have heard.

"My grandchildren love it - it's a fantasy world, the wild wood of their stories!"

"My daughter aged 9 likes to clamber around climbing trees and to imagine being with the "forest folk" (pixies, elves, fairies etc.)"

"...getting to their primitive roots."

Parents and grandchildren see playing and working in a wood as a healthy contrast to children's normal world of indoor play and computer screens.

"The main benefit seems to be stripping away the normal material cocoon of artificial home comforts and replacing them with an awareness of the things that actually matter."

"...away from screen-based games, the children sometimes have difficulty getting started, usually solved by a hammock or low tightrope if that fails a box of matches does the trick."



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