

Disconnect from nature and its effect on health and well-being

A public engagement literature review



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1

Introduction

The human population is increasingly moving into cities. Around 90% of the UK population now live in towns and cities, and nearly 50% of the population worldwide live in urban areas (United Nations Population Fund, 2007). Between 2001 and 2011 the number of people living in minor and major cities increased by 2.4 million (Government Office for Science, 2014). In 2015/16, 843,000 Natural History Museum (NHM) visitors (17% of our total visitors) came from London (MHM, 2016), and a sizeable majority live in other urban areas.

As human populations continue to move into cities, there are concerns that we are becoming disconnected from nature and that this is affecting our well-being (Fuller et al., 2007; Miller, 2005). Traffic danger, health and safety concerns, parental fears, negative attitudes to play and screen-based play are contributing to a 'nature deficit disorder' among the UK's children (Miller, 2005).

A study by the Royal Society for the Protection of Birds (RSPB) and University of Essex describes connection to nature as 'enjoyment of nature', 'empathy for creatures', 'sense of oneness' and 'sense of responsibility'. The study also demonstrates that when young people are connected to nature, it has positive impacts on their education, physical health, emotional well-being and personal and social skills. It concludes that 'children connected with nature are more likely to be interested in their environment, will want to enjoy it and save it – now and in the future' (RSPB, 2013; Chen-Hsuan and Monroe, 2012).

Purpose of this document

The purpose of this document is to inform NHM colleagues about research on the public's connectedness to nature and its link to health and well-being. The Museum is well-placed to address some of the issues and opportunities arising from this research. This paper will also set out the implications for practice that will help inform and shape future Museum projects.

This document is not designed to prove a link to health or well-being, nor measure connectedness to nature. It is designed to understand the current or completed projects and theories and help staff think about how the Museum fits within them.

This is a living document that will be updated regularly with any new literature or research.



2

Definitions

Connection to nature

In its broadest sense 'connection to nature' describes the **mix of feelings and attitudes that people have towards nature** (RSPB, 2013).

Connection to nature may therefore also be described as **'loving nature'**, having a **'sense of awe and wonder'** or simply **'caring for the environment'** (RSPB, 2013). Connectedness to nature can be defined as the **extent to which an individual's view of nature is incorporated into their perception of their own sense of self** (Schultz, 2002)

'Connection to nature is one of a set of constructs which refer to an individual's subjective sense of their relationship with the natural world.'

(Natural England, 2014)

Environmental identity

Clayton (2003) defines environmental identity as **'the establishment of a personal sense of connection to the natural environment which is based on history, similarity and feelings of personal connection.'** A person's environmental identity is related to their connectedness to nature.

Caveat

While not uniform, these definitions predominantly describe an individual's relationship with the natural world. However, it is important to note the ambiguity around the concept of connection to nature and the difficulty in measuring and even proving it.

How do we connect to nature? How do we form or cultivate this relationship with the natural world? And where is this nature? What type of nature are we connecting to? Until these terms are truly defined, any attempt to measure connectedness to nature will be futile. It is therefore important to establish how we connect with nature, and map out both where and how people can connect with nature at the NHM.



3

Where and how do we connect with nature?

Where?

Nature can be an ambiguous concept. People encounter the natural world in many ways, from growing plants in at home to visiting a wildlife sanctuary. Keniger et al have summarised a typology of settings outlining the breadth of settings and examples where humans could possibly connect with nature (2013).

Setting	Description	Examples
Indoor	Inside a building	<ul style="list-style-type: none">• Foliage plants
Urban	Landscape dominated by built form	<ul style="list-style-type: none">• Public green space• Private green space, eg a garden• Roadside trees or isolated urban vegetation
Fringe	The area immediately surrounding a town or city	<ul style="list-style-type: none">• Peri-urban nature reserve
Production Landscape	Agricultural lands (pastoral or cropped)	<ul style="list-style-type: none">• Paddocks, fields, countryside
Wilderness	Area where human influence is low	<ul style="list-style-type: none">• Beach• Ocean• River• Water• Mountain• Forest/woodland• National park
Specific species	Cases where the object of the interaction is defined with no particular setting	<ul style="list-style-type: none">• Marine animals• Birds• Domesticated pets

Table 1: Typology of settings (Keniger et al., 2013)

It can be argued that while on a trip to the Museum itself, visitors will mainly encounter nature in an indoor or urban setting. But it is important to acknowledge that there are many other settings where this interaction can take place.

How?

Keniger summarised the typology of interactions to help unpick some of the ways we can connect with nature that the table above also fits into. It can be argued that NHM visitors should be able to experience three main interactions listed below – indirect, incidental and intentional (2013).

Interaction	Description	Examples	NHM example
Indirect	Experiencing nature while not being physically present in it	Viewing nature in a picture, image, film or through a window	<ul style="list-style-type: none"> • Visiting an exhibition where nature is shown • Looking at specimens • Attending a talk or science show
Incidental	Experiencing nature as a by-product of another activity	Encountering nature incidental to another activity, eg walking or driving to work Encountering vegetation indoors	<ul style="list-style-type: none"> • Visiting the Wildlife Garden • Walking through the Museum grounds
Intentional	Experiencing or being in nature through direct intention	Recreation, eg hiking, camping, wildlife viewing, adventure Gardening or farming Conservation volunteering	<ul style="list-style-type: none"> • Participating in a citizen science project • Volunteering in the Wildlife Garden

Table 2: Typology of interactions (Keniger et al., 2013)

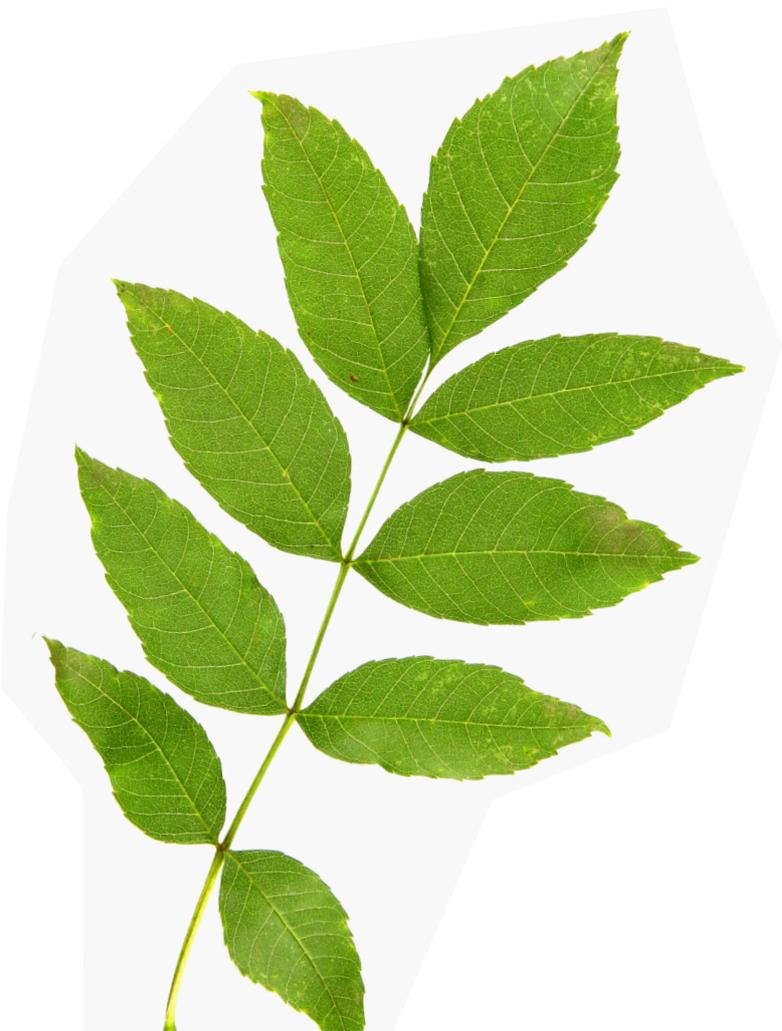
This table only focuses on interactions, however. Another way of looking at connectedness and how people – especially children – connect with nature is through their attitudes, experiences, knowledge and home life.

From a very early age, children connect with nature in a variety of ways.

Way in	Explanation
Attitudes towards nature at home	Family values towards nature are a strong factor that can influence children's connection to nature
Experiences of nature	Spending more time in nature helps children develop a stronger connection to nature
Nature near the home	There is a significant correlation between children's connection to nature and nature near their homes
Knowledge about the environment	Environment education opportunities that increase children's knowledge and skills for solving environmental problems may help promote pro-environmental actions

Table 3: How do children connect with nature? (RSPB, 2013)

Even though we can connect with nature in a range of ways, there is a growing fear that some people, particularly children, are becoming increasingly disconnected from nature.



4

Disconnect with nature

Louv (2005) believes that ‘children now wander less, discover less and are losing some important connections to nature and place’. Ultimately, children – and therefore everyone – are becoming increasingly disconnected from nature. This is due to:

- urbanisation and loss of green space
- parental fears and control
- the authorities
- ‘arms-closed’ conservation

Urbanisation and loss of green space

The increase in people living in urban areas and the lack of green spaces in those urban areas contribute to our disconnecting from nature.

Approximately 75% of Europeans live in urban areas. In 2008, 3.3 billion people – more than half of the world’s population – lived in urban areas (Dye, 2008). Within these areas green space is often in insufficient supply (Bertram and Rehdanz, 2014).

Access to green space is affected by socioeconomic and demographic factors. In England, poorer communities are 10 times less likely to live in the greenest areas because they live in urban areas (RSPB and Wildlife Trusts, 2014). The provision of parks is lower in deprived urban areas than in more affluent ones (Cabe Space, 2010). A government white paper on the natural environment found that access to and use of green space are lower amongst people who are elderly, have a disability, are from a BAME background and/or live in a deprived area (HM Government, 2011).

While the rise in people living in urban areas without access to green space contributes to disconnecting from nature, it goes deeper than just this.

Parental fears and control

Children cannot venture as much outside their own homes due to parents controlling what they can and can’t do in an effort to keep them safe (Moss, 2012). This is attributed to ‘misplaced good intentions’ around issues such as traffic, the risk of nature and stranger danger (Moss, 2012).

‘If most of today’s children are not even allowed down the street by themselves, the chances of them exploring the natural world are even more remote.’ (Moss, 2012)

Traffic

From a young age, children are not allowed to play outside, run errands on their own or generally be unsupervised outside, because streets are seen as unsafe (Moss, 2012).

Perceived risk of nature

Fears over children falling out of trees and hurting themselves during unsupervised play lead to over-supervision or keeping children indoors (Moss, 2012).

‘We continue to assume that all dangers lie outside the home, and that by keeping our children indoors we are somehow removing them from all risk.’ (Moss, 2012)

Stranger danger

Fear of something happening to their children when playing outside, along with a fear of strangers (exacerbated by current affairs and news stories), mean fewer parents are willing to allow their children to play outside unsupervised or even leave the house (Moss, 2012).

Authorities

Authorities (such as teachers or the police) actively stopping children interacting with nature, for instance banning climbing trees for fear of legal action and compliance with health and safety, leads to nature feeling out of bounds for many children (Moss, 2012).

'Arms-closed' conservation

Institutions that don't allow unstructured play and discovery in outdoor spaces, and implement several rules in the name of conservation ensure that nature feels out of bounds for many children (Moss, 2012).

All these factors lead to a sense of disconnect from nature and the 'extinction of experience' (Pyle, 1978).

'One of the greatest causes of the ecological crisis is the state of personal alienation from nature in which many people live.' (Pyle, 1978)



5

Environmental education and outdoor learning

Through its attempts to connect students with the natural world, outdoor learning in schools can be described as not a subject or topic but 'a way of teaching' (Plymouth University, 2016).

The benefits of outdoor learning for students are varied. It can be argued that greater amounts of natural space in or around living and learning environments are associated with higher levels of physical activity; better emotional, behavioural and cognitive outcomes; and children developing a greater connectedness to nature (Plymouth University, 2016).

However, opportunities for outdoor learning are diminishing due to staff confidence in teaching outside and delivering the curriculum (Plymouth University, 2016). For example, the Monitor of Engagement with the Natural Environment Survey found that in an average month in 2013/14, only 8% of all children in England (aged five to 16) visited natural environments with their schools. During leisure time, however, the area that children explore and play around their homes has reduced by 90% over the past 20 years (Plymouth University, 2016).

It can be argued that disconnection from nature stems from the way children are taught about the natural world in schools. Sobel (1996) argues that children are disconnected from the world outside their doors while being taught about endangered animals and ecosystems through electronic media and at school.

'In rushing to teach them about global issues and responsible activism, we neglect the fact that young children have a fascination with the immediate, and an undying curiosity that requires direct sensory experience rather than conceptual generalisation.' (Sobel, 1996)

Therefore, if children are continually taught about endangered animals from far-away ecosystems and habitats, they risk losing an important connection to their local wildlife and green spaces.



6

Why is a connection to nature so important?

Connectedness to nature is important because it leads to concern for nature. Mayer and Frantz (2004) state that 'if people feel connected to nature, then they will be less likely to harm it, for harming it would in essence be harming their very self'. Clayton (2003) states that being connected to nature nurtures our environmental identity.

On the other hand, ignorance of nature leads to a lack of interest and care for it. As Miller (2005) states, collective ignorance ultimately leads to collective indifference.

Having a connection to nature is also linked to health and well-being. Children who disconnect from nature and stay indoors are less healthy and generally have a lower quality of life (RSPB, 2010).



7

Health and well-being

Does a lack of nature have a negative effect on our health and well-being?

The World Health Organisation defines health as ‘a state of physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO, 1948). The Millennium Ecosystem Assessment includes a supportive environment, personal security, freedom of choice, social relationships, adequate employment and income, access to educational resources and cultural identity in the definition of health and well-being (MA, 2005).

Well-being can be described as:

‘a positive physical, social and mental state; it is not just the absence of pain, discomfort and incapacity. It requires that basic needs are met, that individuals have a sense of purpose, and that they feel able to achieve important personal goals and participate in society. It is enhanced by conditions that include supportive personal relationships, strong and inclusive communities, good health, financial and personal security, rewarding employment, and a healthy and attractive environment.’
(DEFRA, 2007)

Chronic or non-communicable diseases such as depression, cancer, cardiovascular disease, diabetes and dementia are the leading cause of death globally. They are responsible for 38 million (68%) of the world’s 56 million deaths in 2012. Out of this, more than 40% (16 million) were premature deaths under 70 years of age (WHO, 2014). Many of these non-communicable diseases are linked to lifestyle, including physical inactivity, poor diet and chronic stress – which are increasing problems in urban areas.

Lack of green space seems to contribute to this as those who live near green space are 24% more likely to be physically active than those who do not (HM Partnerships, 2011). Modern sedentary, indoor lifestyle is having profound consequences on children’s health: obesity, physical strength and vitamin D deficiency-induced diseases such as rickets, short-sightedness and asthma (Miller 2005).

Living in cities is associated with increased levels of mental illness, particularly anxiety disorders and depression (Lederbogen et al., 2001; Peen et al., 2010). Similarly, living in an area which is continually exposed to unacceptable levels of noise can be associated with a wide range of adverse impacts on health, quality of life and well-being (DEFRA, 2011).

Does connecting with nature improve our health and well-being?

Research is increasingly finding links between contact with nature (or green spaces) and human physical and mental health (Fuller et al., 2007; Keniger et al., 2013; Maas et al., 2009; Sandifer, Sutton-Grier and Ward, 2015; Shanahan et al., 2015; White et al., 2013). This concept includes a wide range of green spaces (from remote wildernesses to open fields and allotments or city parks), different levels of interaction (from viewing nature to more active involvement in nature) and conservation-based activities (Bragg, Wood and Barton, 2013).

According to the 2011 Survey of Public Attitudes and Behaviour towards the Environment, 74% of adults who visited public gardens, parks or commons reported that fresh air was their most important reason for visiting, followed by open space (46% of the remaining answers), scenery (36%) and tranquillity (27%) (DEFRA, 2011). The report concludes that having access to green space can improve the quality of life for many people. The mechanisms for these effects are still uncertain but they are increasingly the subject of research (Shanahan et al., 2015), but they could be linked to reduced negative thoughts when surrounded by natural environments (Bratman et al., 2015).

Alongside the human well-being benefits of nature in general, and urban green spaces in particular, urban green spaces also positively impact biodiversity (Goddard et al., 2010). Wildlife-friendly management of urban areas, including private gardens, can have wider impacts on levels of biodiversity in cities, and is subsequently linked to human well-being.

Overall, the message from both well-being and biodiversity research is that lots of small changes can have a big effect – for example, planting a tree or spending more time in a nearby park could have additive effects across the population (Shanahan et al. 2015; Bratman et al, 2015).

Keniger has summarised some of the benefits that arise from connecting with nature, from physiological wellbeing such as reduced blood pressure to improved social interaction (2013).

Benefit	Description	Examples
Psychological well-being	Positive effect on mental processes	<ul style="list-style-type: none"> • Increased self-esteem • Improved mood • Reduced anger/frustration • Psychological well-being • Reduced anxiety • Improved behaviour
Cognitive	Positive effect on cognitive ability or function	<ul style="list-style-type: none"> • Attentional restoration • Reduced mental fatigue • Improved academic performance • Increased education/learning opportunities • Improved ability to perform tasks • Improved cognitive function in children • Improved productivity
Physiological	Positive effect on physical function and/or physical health	<ul style="list-style-type: none"> • Reduced stress • Reduced blood pressure • Reduced cortisol levels • Reduced headaches • Reduced mortality rates from circulatory disease • Faster healing

Benefit	Description	Examples
Physiological	Positive effect on physical function and/or physical health	<ul style="list-style-type: none"> Addiction recovery Perceived health/well-being Reduced cardiovascular disease, respiratory disease and long-term illness Reduced occurrence of illness
Social	Positive social effect on an individual, community or national scale	<ul style="list-style-type: none"> Social interaction Social empowerment Reduced crime rates Reduced violence Interracial interaction Social cohesion Social support
Spiritual	Positive effect on individual religious pursuits or spiritual well-being	<ul style="list-style-type: none"> Increased inspiration Increased spiritual well-being
Tangible	Material goods that an individual can accrue for wealth or possession	<ul style="list-style-type: none"> Food supply Money

Table 4: Typology of benefits (Keniger et al., 2013)



8

Implications for future practice

In order to reconnect people with nature and environmental issues, we have to inspire a connection with nature in our visitors (Novacek, 2008). This can be done through a variety of means, such as:

- offering a space for children and adults to engage with the natural world in an urban area
- offering a sympathetic adult presence in the open area to encourage children and adults to visit (London SDC, 2011). This will ensure that parents are happy to let the children engage with nature semi-independently, and are safe in the knowledge that the children are being looked after
- offering facilitated activities and occasional events to engage people with the natural world around them, whether at the NHM or at home (London SDC, 2011).
- providing digital, online and mobile technology that allows people to explore the outside world in a structured way (London SDC, 2011)
- maximising opportunities to provide exploratory, hands-on, play-orientated experiences with – and in – nature (London SDC, 2011)



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