

Summary of evidence: Access and engagement

1 General introduction

This summary sets out Natural England's assessment of the evidence relating to access and engagement. It provides a statement of the current evidence base, presenting:

- what we know (with supporting data and key references);
- areas that are subject to active research and debate; and
- what we do not yet know from the evidence base.

It also provides information on Natural England research and key external research programmes to show how we are seeking to fill gaps.

This summary forms part of a suite of summaries covering all of Natural England's remit. The summaries are not systematic reviews, but enable us to identify areas where the evidence is absent, or complex, conflicting and/or contested. These summaries are for both internal and external use and will be regularly updated as new evidence emerges and more detailed reviews are completed.

2 Introduction to access and engagement

This is not a comprehensive review of all of the evidence relating to the complex relationship between people and the natural environment – there is a vast literature cutting across different theoretical and methodological traditions which cannot be easily summarised in a short document. We concentrate on three areas:

- **People** – This focuses on patterns of people's use (and non-use) of the natural environment, looking at general patterns and trends in the population (including underrepresented groups), as well as motivations and barriers.
- **Places** – This section focuses on the places where people enjoy and interact with the natural environment, and issues that arise from access.
- **Benefits** – This draws together some of the evidence on the benefits to people from the natural environment.

3 People – how and why people visit the natural environment

This section summarises evidence about how people use and enjoy the natural environment. It focuses on patterns of use (and non-use) by the general population as well as key groups, motivations and barriers to using the natural environment and voluntary action.

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Patterns of use and non-use of the natural environment

What we know:

3.1 There were an estimated 2.93 billion visits to the natural environment by the adult population of England between March 2013 and February 2014. The majority of visits were taken to destinations within towns and cities (1.36 billion) or countryside locations (1.31 billion) (Natural England 2015).

3.2 Nine in ten members of the English adult population visited the outdoors at least once in the last 12 months. Around two fifths had taken a visit in the last seven days (Natural England 2015).

3.3 Walking is the most frequently undertaken activity on visits to the natural environment. Half of visits (1.5 billion visits) involved walking with a dog, while around a quarter (775 million visits) involved walking without a dog. A half of visits were undertaken by an adult alone and one fifth of visits included children in the party. The average party size was 2.4 (Natural England 2015).

3.4 The majority of visits to the natural environment are to green spaces close to people's homes. Just over four out of ten visits (43 per cent) were to green spaces within one mile of home. A further quarter of visits were within one to two miles from home. The average visit lasted just over two hours (2 hours 1 minute). Just over a quarter of visits lasted less than an hour (Natural England 2015).

3.5 There is considerable variation across the population in visits to the natural environment. Those who are less likely to have taken a visit to the natural environment in the last seven days were those of Black and Minority Ethnic (BAME) origin, those aged 65 and over, people living in deprived urban areas, and those in social grades D and E (Natural England 2015). Population groups that generally visit the outdoors less overall tend to take visits to towns and cities when they do visit, in particular those of BAME origin, those between the ages of 16 and 24 and those in social grades D and E (Burt *et al.* 2013; Burt, Stewart & Preston 2013). These groups are therefore less likely to reap the benefits of contact with the natural environment (see Section 5).

3.6 The pattern of visits to the natural environment is changing. The frequency of visits taken at least once a week rose from 54 per cent in 2009-10 to 58 per cent in 2013-14 (Natural England 2015). The seasonally adjusted data shows that following a decline in 2009-10 there has been an overall increase in visit numbers, although this growth has slowed in 2013-14. There is evidence of growth in the volume of visits to green spaces in towns and cities (Natural England 2015).

Areas that are subject to active research and debate:

3.7 Does the quality of green space influence patterns of use? We need a better understanding of the relationship between the quality of green space and levels of use and enjoyment, and the factors that mediate this.

What we don't know:

3.8 How current societal and economic changes are influencing patterns of use and engagement with the natural environment.

3.9 What impact current changes to the population structure (in particular ageing) will have on patterns of use and support for the natural environment.

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3.10 What local communities want from their local green space in terms of function and design.

3.11 How we can create new green space in urban areas of deprivation and/or areas with low levels of accessible natural green space.

Children and the natural environment

What we know:

3.12 Children's patterns of play have changed in recent years. Children now spend less time playing in natural places than they did in previous years (England Marketing 2009). About 12 per cent of children in England (or c.1.3 million) never visited any natural environment spaces during 2013-14 (Hunt *et al.* in press).

3.13 Children use a wide range of open spaces to engage with the natural environment. Over time there has been a shift from 'wild' and sometimes distant open spaces towards playing in designated spaces closer to home, which has resulted in a decrease in opportunities for children to engage with the natural environment (Wooley *et al.* 2009).

3.14 Children's relationship with the natural environment changes as they mature. They move from the 'age of wonder' in early childhood, to physical engagement in middle childhood, through to increasing socialisation in adolescence and re-engagement in early adulthood (Wooley *et al.* 2009).

3.15 There is a relationship between the presence of children in a household and the visiting behaviours of adults. In 2013-14 69 per cent of all children in England visited the natural environment at least once a week with the adults in their household. However, this proportion increased to 84 per cent of children in households where the adults visited at least weekly (Hunt *op cit.*). The presence of children in the household also increased the likelihood of adults making frequent visits to the natural environment (59 per cent in households with children compared to 52 per cent in households without children) (Stewart & Costley 2013).

3.16 Local green space is the main destination for children visiting the natural environment. Nearly half (47 per cent) of all children in England (4.8 million) visited local urban parks in 2013-14 (Hunt *et al.* in press).

3.17 An estimated 310,000 children took part in outdoor learning visits to farms funded through agri-environment schemes in 2013-14. The number of children taking part in farm visits as part of the Educational Access Scheme has more than doubled in the last three years, with Educational Access contributing around a quarter of all organised visits for learning in the natural environment in the UK (Natural England data – unpublished).

3.18 Playing in the natural world provides a range of physical and mental health benefits. These include cognitive skills, balance, co-ordination and spatial awareness (Wooley *et al.* 2009; Muñoz 2009). It also encourages children to work constructively together as well as improving their general levels of physical fitness.

3.19 Children gain a broad range of social and economic benefits by learning in natural environments. A broad range of skills ranging from the technical to the social have been identified as outcomes of Learning in the Natural Environment (LINE), particularly when it is integrated with the everyday school curriculum (Dillon & Dickie 2012).

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Areas that are subject to active research and debate:

3.20 What are the mechanisms through which younger children's experiences of outdoor play feed into later teenage and adult life? There is a lack of 'longitudinal' data to allow us to understand trends and changes over time in a specific population or location.

3.21 What is the long-term impact of outdoor learning on educational outcomes and pro-environmental values and behaviours later in life? Whilst there is some quantitative data available, most of this is cross sectional and of limited use in terms of understanding causality. The Natural Connections Demonstration Project is seeking to understand the short and medium-term learning benefits of outdoor learning (see also Section 6.4).

What we don't know:

3.22 How and where children access and engage with the natural environment, and who mediates this access. How does access and engagement vary by gender, ethnicity and social background?

3.23 How we can encourage greater levels of access amongst key groups of children and young people.

Voluntary action for the natural environment

What we know:

3.24 The proportion of the population that regularly volunteer. In 2013-14, 41 per cent of people volunteered formally (ie through a group, club or organisation) at least once in the previous year; 27 per cent said they took part at least once a month ('regular volunteers'); 64 per cent of people said they had volunteered informally at least once in the last year prior to being interviewed. Overall, there was no significant change in volunteering rates between 2012/13 and 2013-14 (Cabinet Office 2014).

3.25 Younger people are less likely to take part in formal volunteering. Younger people (aged 26 to 34) are less likely to take part in formal volunteering than those aged 35 to 74 (24 and 31 per cent respectively). 28 per cent of 16 to 25 year olds and 27 per cent aged 75 or over volunteered regularly (Cabinet Office 2013).

3.26 People with higher qualifications are more likely to take part in volunteering than those with lower level or no qualifications. People from managerial and professional occupations, and full-time students, are more likely to participate in regular formal volunteering than those who have never worked or who are long-term unemployed (Cabinet Office 2013).

3.27 There are significant differences in the level of volunteering between urban and rural areas and by region. Those living in rural communities are more likely to volunteer formally on a regular basis compared with those living in urban communities (36 per cent and 27 per cent respectively). There is also regional variation, with regular formal volunteering being most prevalent in the South West (34 per cent), East of England (33 per cent) and the South East (32 per cent) and least prevalent in the North East (21 per cent) and North West (25 per cent). Levels of participation in regular formal volunteering are related to area deprivation, where participation generally decreases as the level of local deprivation increases (Cabinet Office 2013).

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3.28 Volunteering can have a positive effect on health, fitness and individual well-being.

Benefits include improved happiness, life satisfaction, self-esteem, sense of control over life, stamina and fitness, and improved physical and mental health (CLES Consulting 2011; Murray *et al.* 2008).

3.29 There was a 34 per cent increase in conservation volunteering between 2000 and 2013.

However there has been a decrease (of 4 per cent) in the five years to 2013 (JNCC 2014). This data is part of the UK Biodiversity Indicators, which include a measure of volunteer time based in conservation which is based on the number of hours worked by volunteers for 13 UK conservation charities and public bodies (including Natural England) (JNCC 2014). Natural England has almost 3,000 registered volunteers who support work on SSSIs, provide bat advice, or take office and student placements (Natural England data – unpublished).

Areas subject to active research and debate:

3.30 What are the wider societal benefits of volunteering for the natural environment? We know some of the individual and economic benefits but the broader societal benefits are harder to measure.

What we don't know:

3.31 Whether there is a great environmental benefit from using volunteers. We do not know whether there are additional benefits (for example enhanced personal commitment, better quality) from volunteers undertaking natural environment improvements when compared to the use of contractors.

Motivations & barriers

What we know:

3.32 People are motivated to visit the natural environment by a range of factors. These include exercising the dog (49 per cent), health and exercise (45 per cent) and to relax and unwind (29 per cent). We know that motivations vary significantly across the population. For example those aged 55 and over, those with a long term limiting illness or disability or in social grades ABC1 were more likely to take visits for health and exercise reasons. People are increasingly motivated to visit for health and wellbeing reasons (Natural England 2015).

3.33 A combination of work pressures and health reasons provide the main barriers for people not visiting the natural environment. Overall a quarter (26 per cent) stated they were too busy at work and 18 per cent cited poor health as reasons for not visiting. Work related reasons for not taking a trip are much more prevalent for those under 55 years and health related issues a problem for those 55 years and over. Physical features such as stiles, gates or steps were the most significant problem facing respondents that had not made a trip due to disability or poor eyesight (Natural England 2015).

3.34 The motivations and barriers to using the natural environment vary across the population. For Black and Minority Ethnic (BAME) communities, the main barriers are a lack of time both at work and at home, with family commitments factors restricting use of the natural environment. Key motivators are around playing with children, walking and social activities with family and friends. For people resident in urban deprived locations the main barriers are being too busy at home or work, lack of access to a car and expense. Key motivators are entertaining children and dog walking. Older people (65 and over) are more likely to be motivated by health and exercise and enjoyment of scenery and wildlife (Burt *et al.* 2013; Burt, Stewart & Preston 2013).

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3.35 The barriers to young people accessing and enjoying wild adventure space. These include social exclusion and concerns about risk (including adults' concerns and fears), lack of resources and a range of societal pressures (eg negative perceptions of woodland and wilderness by the media) (Matthews *et al.* 2000, Ward Thompson, Travlou & Roe 2006).

3.36 The motivations for people using urban parks are driven more by their attitudes towards nature (or 'nature orientation') than by the availability of green spaces. A study of users of urban parks in Brisbane, Australia found that whilst both orientation and opportunity were important drivers of visits to parks, orientation was the most important factor. This suggests that measures to increase connection with nature may be more effective in increasing use of parks than measures to increase availability of urban green space (Lin *et al.* 2014).

Areas subject to active research and debate:

3.37 What do local spaces need to offer to encourage greater use by children and hard-to-reach groups? Is there significant variation in community needs that could be used to help design local green spaces?

3.38 What are the underlying motivations for children visiting (or not visiting) the natural environment? We have some evidence but much of this is based on research with adults.

3.39 What are the benefits of engagement with the natural environment for children with particular needs? There is some evidence of the benefits of contact with nature for children on the autistic spectrum, but much of this is anecdotal or qualitative, with limited evidence of impact (Blackesley, Rickinson & Dillon 2013).

What we don't know:

3.40 The deeply held personal values and perceptions that influence motivations and self-reported barriers to visiting the natural environment.

4 Places – where people interact with the natural environment

4.1 This section focuses upon the places where people use and enjoy the natural environment, covering access infrastructure (the quantity, quality and distribution of green space), the places that people use and issues relating to access.

Our access infrastructure

What we know:

4.2 The types of places that people go to when making visits to the natural environment. In 2013-14, 46 per cent of all visits (1.31 billion visits) were to the countryside and 45 per cent were to a green space in an urban location (1.36 billion visits), 6 per cent (0.17 billion visits) were to a green space in a coastal town or city and 3 per cent (0.09 billion visits) to another coastal location. Since 2009 there appears to be an increase in the number of visits to destinations in towns and cities and a possible decrease in countryside destinations (Natural England 2015).

4.3 The importance of close-to-home spaces in providing opportunities for enjoying the natural environment. Two thirds (68 per cent) of visits to the natural environment are within two miles of the respondent's home or other starting point and a quarter (27 per cent) include a visit to a park in a town or city (Natural England 2015).

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4.4 The quantity and location of the access infrastructure in England. Natural England holds data on over 80 per cent of accessible land. This includes both map-based data and factual data on the characteristics and quantity of accessible green space, including 1 million hectares of Open Access Land, 120,000 miles of Rights of Way, 430 Country Parks, and 222 National Nature Reserves. However, there is no consistent national map of accessible natural environments for England.

4.5 The number of sites receiving a Green Flag Award for good quality green space rose tenfold from 120 in 2002 to over 1,285 in 2014 (Green Flag – unpublished data).

Areas that are subject to active research and debate:

4.6 What is the condition of Rights of Way in England? Although there has not been a full recent survey of the condition of Rights of Way, the Ramblers recent study 'Paths in Crisis' (The Ramblers 2013) found that there are over 100,000 path problems in England that have been reported to councils but which haven't been fixed. These range from missing signposts and overgrown hedges to dangerous barbed wire and flooded paths. Over 30 per cent of councils in England cut their path budgets in 2013, following three years of severe cuts in overall council funding (The Ramblers 2013). There are over 4,000 paths on a waiting list to be protected as a Right of Way. This protection would stop them being easily built on or closed .

4.7 Whether people require a range of different types of accessible natural environment at different scales and distance from home? Choice may be important to match different stages of life, different seasons and even different times of the day or week.

What we don't know:

4.8 The proportion of the population who live in areas with low levels of accessible green space. The forthcoming provision of new data by the Ordnance Survey on all publicly accessible green and open space will be a major step forward in undertaking this type of analysis.

Managing access

What we know:

4.9 The status of Rights of Way Improvement Plans (ROWIPs). An evaluation of ROWIPs in 2008 showed that 80 per cent of counties and 70 per cent of unitary authorities had prepared a ROWIP by that date, but only one London Borough had done so (Natural England 2008). There has been no more recent survey. The evaluation confirmed that the process of preparing ROWIPs had involved the public and increased their understanding and expectations, and had raised awareness within authorities of the importance of the network.

4.10 There is a decline in the number of people entering jobs involved in the management of green space. There is both a decline in the numbers entering these occupations and a lack of existing skills within the sector (CABE 2009).

Areas subject to active research and debate:

4.11 How are patterns of ownership and provision of access infrastructure shifting between the public sector and third sector?

4.12 Are there changes in the level or nature of disturbance to wildlife as a result of providing public access? Disturbance has been identified as a key issue affecting the condition of European sites

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(for example Habitats Directive Article 17 reporting). Is the amount of disturbance caused by people accessing the natural environment increasing, either due to more visits being made to sensitive locations or growing popularity of new forms of recreation that might be more disturbing to wildlife (for example kite surfing)?

4.13 How does disturbance affect the condition of protected sites? Can evidence reduce uncertainty about the extent to which disturbance is a contributing factor to deterioration in site condition?

4.14 How can access management help to reduce the level of disturbance? There are many ways of influencing people's behaviour on-site, but what are the most effective techniques for reducing the impact of disturbance on wildlife?

What we don't know:

4.15 How effective are some of the new and emerging alternative models of delivery of access provision.

5 Benefits from accessing and enjoying the natural environment

5.1 This section focuses upon some of the benefits to people of accessing and enjoying the natural environment. Understanding the wider and multiple benefits of the natural environment to people is increasingly important, and is central to the ecosystem approach (a way of sustainably managing land for the benefit of people and nature). It summarises evidence in three areas: health and wellbeing benefits, engagement with the natural environment (attitudes, behaviours and action), and benefits to the economy.

Health and wellbeing

What we know:

5.2 Ecosystems provide a number of health and wellbeing benefits. These include: a) direct positive effects on physical and mental health; b) indirect positive effects (for instance providing places for people to have contact with nature); and c) reducing the threats and incidence of pollution and disease vectors (UK NEA 2011; Stone 2009 & 2010). The evidence presented here focuses on the first two of these benefits.

5.3 There is a relationship between levels of deprivation and access to green space. People living in the most deprived neighbourhoods are ten times less likely to live in the greenest areas compared to people living in the least deprived neighbourhoods (Mitchel and Popham 2008). The most affluent 20 per cent of wards in England have five times the amount of parks or general green space than the most deprived ten per cent of wards (CABE 2010).

5.4 There is a range of mental health benefits from contact with nature. There are psychological, physical and mental benefits of contact with the natural environment for people suffering from mental illness and dementia (Clark *et al.* 2013). Contact can also help prevent these conditions getting worse. Mental health benefits of contact with nature include reduced stress and symptoms of depression, enhanced concentration and mood, enhanced self-esteem and reduced psychosis (Pretty *et al.* 2005; Bowler *et al.* 2010). Living in a neighbourhood with less green space is associated with greater

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risk of anxiety and depression, feelings of loneliness and perceived shortage of social support (Maas *et al.* 2009). People living in areas with high levels of green space had lower levels of mental distress compared with those living in areas with little green space (White *et al.* 2013a).

5.5 People are happier in natural environments. Levels of subjective wellbeing (a self-reported measure of people's satisfaction with their life) are higher in natural environments than urban environments (MacKerron & Mourato in press). More frequent visitors to the natural environment rated themselves as more happy than did less frequent visitors (Natural England 2015).

5.6 The benefits of exercising in a natural environment. There is a positive benefit of a walk or a run in a natural environment compared to a synthetic environment; this is additional to the benefits from physical activity alone (Bowler *et al.* 2010). A systematic review found that exercising in natural environments, compared to exercising indoors, is associated with greater feelings of revitalisation, and a greater intention to repeat the activity (Coon *et al.* 2011).

5.7 The health and wellbeing benefits of different types of natural environments. There are significant differences in the levels of self-reported feelings of restoration (including feelings of being calm, relaxed, revitalized and refreshed) after recent visits to different types of places. Visits to coastal, woodland and upland areas were most beneficial. Visits to towns and urban parks were less beneficial (White *et al.* 2013b).

5.8 Further information on the evidence base relating to health and the natural environment is available from the [Natural solutions for tackling health inequalities report](#) from the 2014 Natural Solutions Conference which highlights the evidence of the benefits of green spaces to health and wellbeing outcomes, and the inequalities in use of, and access to, natural environments across England.

Areas subject to active research and debate:

5.9 Are there greater health and wellbeing benefits from more biodiversity-rich environments? A systematic review found some evidence that biodiverse natural environments promote better health through exposure to pleasant environments or by encouraging health promoting behaviours (Lovell *et al.* 2014). Overall, however, the review found that the evidence is inconclusive.

5.10 Does access to green space promote more active lifestyles? Most research (eg Lachowycz & Jones 2011) shows evidence of a generalised effect but we know little about the nature of this relationship and the exact pathways through which changes to lifestyles take place.

5.11 What are the health benefits to people of different types of landscapes and places? There is some evidence about the emotional responses to different environments (eg White *et al.* 2013b) and landscapes (eg Research Box *et al.* 2009) and this could be extended to include a wider range of landscapes and physical and psychological benefits.

5.12 How effective are nature-based activities in providing benefits for vulnerable people? Activities include care farming, green exercise therapy and ecotherapy. The evidence base is mainly anecdotal and qualitative and there is limited quantitative evidence of impact (Bragg *et al.* 2014).

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What we don't know:

5.13 The effectiveness of interventions designed to improve health outcomes through contact with the natural environment. There is a need for higher quality robust evaluation using standardised measures.

5.14 The optimum levels or thresholds (frequency, duration or type of exposure) of contact with the natural environment to deliver different types of benefits.

5.15 The mechanisms or pathways through which access to green space improves health and wellbeing. We have a partial understanding but the long term and complex nature of the pathways make cause-effect relationships difficult to prove.

Engagement (attitudes, behaviours and action)

What we know:

5.16 The importance of the natural environment to people. In 2013-14, 94 per cent of people agreed that having open green spaces close to home is important. A similar proportion (95 per cent) agreed that there are many natural places they may never visit but they are glad they exist (Natural England 2015).

5.17 There is a gap between people's attitudes (or values) and their behaviours towards the environment (known as the 'value-action' gap). Analysis of MENE data illustrates the size of this gap by focusing on the value attributed to the natural environment by respondents and the level of action taken to preserve it. Only one in seven undertook 'high level' actions such as donating time or money (Natural England 2015).

5.18 There is an association between children's early contact with and use of natural environments and their use and perceptions of natural environments later in life. Childhood experience plays a role in shaping an attachment to place and a lack of experience of nature as a child may directly result in a lack of contact during adulthood (Ward Thompson *et al.* 2008; Pretty *et al.* 2009; Wooley *et al.* 2009). However, whilst many of these studies highlight a correlation between spending time in nature as a child and being engaged with nature as an adult, they do not establish causation (Christmas *et al.* 2013).

5.19 Green space can play a role in promoting social cohesion. Good quality green space can foster better community cohesion and promote social inclusion (Fredrickson & Anderson 1999). Community open space can enhance social ties and provide a sense of community, and can promote social integration within disadvantaged communities (Dines *et al.* 2006).

Areas subject to active research and debate:

5.20 What is the effect of lifestyle changes and significant life stage events on attitudes and patterns of behaviour towards the natural environment? This has been explored in relation to sustainable consumption and pro-environmental behaviours (eg recycling, transport choices) but not so far in relation to the natural environment.

5.21 What is the relationship between visiting the natural environment and more sustainable attitudes and behaviours? A recent analysis of MENE data has explored the relationship between visits and concern for the natural environment (Natural England in press). This indicates that there is a

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relationship between visits and attitudes, but this is far from conclusive or evidence of a causal relationship.

5.22 There is a complex relationship between use and enjoyment of the natural environment and wider pro-environmental attitudes and behaviours. There are significant challenges for developing the evidence base in this area. These include the long-term nature of the changes, and the limited evaluation of the effectiveness of behaviour change interventions. Much of the evidence is qualitative or anecdotal (Christie 2009).

What we don't know:

5.23 The role of personal 'epiphany moments' in shaping personal interest or commitment to the natural environment. 'Epiphany moments' are those individual experiences of the natural environment either through direct physical contact or something more indirect like watching a particular TV programme that represent a 'moment in time' shift in someone's awareness of and attitude to the natural environment.

5.24 The mechanisms or pathways through which people move from interest to concern through to more active support for and involvement with the natural environment. There are many examples of small scale or qualitative studies but there is limited longitudinal and/or quantitative work to understand these mechanisms.

Benefits to the economy

5.25 There is significant interest in understanding and measuring the economic benefits and value of access to the natural environment. It is important to make a clear distinction between economic value to society (which may be significant) and economic impact (which may be less significant at a national scale, but may still be very relevant locally) as many activities in the natural environment may only involve relatively small levels of expenditure.

What we know:

5.26 Tourism makes a significant contribution to the UK economy. In 2013 tourism was the UK's sixth largest industry, employing 9.6 per cent of the country's workforce, and is worth £126.9 billion to the UK economy (Visit Britain 2014).

5.27 The natural environment provides tourism and recreation benefits. Many nature-based holidays include activities such as walking. Whilst these may have great value to those taking part, the associated spend (and therefore economic impact) may be relatively limited (Rolls & Sunderland 2014). Not all rural tourism is dependent on a high quality natural environment; for example four-wheel driving experience days are only loosely linked to environmental or landscape quality (Roberts & Hall 2004).

5.28 People on leisure trips to the natural environment make a contribution to the economy from both direct and indirect expenditure associated with the trip. Money is spent on around one quarter of day visits to the natural environment, with an average of £28 spent per visit. The average total spend per year by visitors to the natural environment is estimated at £20 billion (Stewart & Wilson 2015). It is also estimated that around £10.3 billion is spent on holidays in England involving outdoor pursuits (Visit England 2014). Taking into account overlap between the various surveys, it is estimated that a total of £27 billion is spent per year on visits to the natural environment (Stewart & Wilson 2015).

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5.29 There were 3.23 million days visits to the natural environment in 2000 valued at £10.04 billion (UK National Ecosystem Assessment). This could potentially increase to £24 billion by 2060 (Sen *et al.* 2011).

Areas subject to active research and debate:

5.30 How do we understand the value of access? Economic valuation is not neutral or value-free but takes place in a broader philosophical and cultural framework. There is also an increased understanding of the range and diversity of values that may be held by people in different contexts, which presents particular challenges to analysts and decision makers trying to take account of value. The concept of shared values has been explored through the National Ecosystem Assessment Follow-on project by Kenter *et al.* (2014).

What we don't know:

5.31 The economic value of providing access to the natural environment. Whilst numerous local and national studies have attempted to understand the economic value and/or impact of access, there is lack of consensus about methodology and therefore confidence in understanding the full picture.

6 Current Natural England evidence projects

6.1 Monitor of Engagement with the Natural Environment (MENE). MENE is a sample survey of the adult population which provides data on visits to the natural environment at regional and national level. It is undertaken as part of a weekly in-home omnibus survey. It provides information to support a range of Natural England projects and programmes. MENE has been commissioned by Natural England, in conjunction with Defra and the Forestry Commission. The first 5 years of fieldwork have been completed and a sixth year (2014/15) is now underway. More information is available from: www.gov.uk/government/collections/monitor-of-engagement-with-the-natural-environment-survey-purpose-and-results

6.2 National Indicator of Children's Engagement with the Natural Environment. The Project is using MENE data to develop a national indicator of children's engagement with the natural environment. The Indicator is part of the Defra Indicator Set to assess Natural Environment White Paper (NEWP) and Biodiversity 2020 performance, by ONS as part of their indicator set for children's wellbeing and by Public Health England (PHE). The Project was funded by Defra, PHE, English Heritage, King's College and Natural England.

6.3 The economic and social benefits of access: on-site visitor survey for National Trails and the English Coast Path (ECP). The aims of the project are to i) develop a methodology and ii) undertake an on-site survey of visitors to National Trails and ECP. This will enable us to: undertake a cost benefit analysis of National Trails and ECP; identify a baseline of visitor use and experience for a future evaluation of ECP; understand the wider social and wellbeing benefits of providing access to the natural environment; and inform the future investment and management of National Trails.

6.4 Evaluation of the Natural Connections Demonstration Project. The 3½ year-long project (September 2012 – March 2016) is involving around 200 schools and between 200-500 volunteers in the south-west of England in Learning in the Natural Environment (LINE). Primary, secondary and special schools are included within five areas of high multiple deprivation: Plymouth, Torbay and Devon, Cornwall, North Somerset and Bristol, with around 40 schools in each of these hubs. The evaluation is looking at project process, scale, scope as well as the impact of LINE. It is intended to inform the project

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development during the project lifetime, report to funders and provide recommendations for any future roll out of the project.

6.5 Dementia and Engagement with Nature. Partnership project with Dementia Adventure as lead. The context for this work is from the Greening Dementia – a literature review of the benefits and barriers facing individuals living with dementia in accessing the natural environment and local greenspace – NECR137. A subsequent stakeholder consultation, undertaken by Dementia Adventure in partnership with Natural England, confirmed that there was an opportunity and strong desire from both the dementia sector and the green space sector to do more in this area for people living at home with dementia. However, before services and activities can be designed and developed to support these people to remain/become active while living at home with the condition we needed greater clarity and understanding of their specific needs and the barriers to potential solutions. This piece of insight work seeks to address this by gathering the views of people living with dementia and carers, through a co-production process, about the role of outdoor activities and natural outdoor space in helping people with dementia to live well.

6.6 A review of nature-based interventions in mental health. Partnership project with MIND as lead. The research will categorise nature-based interventions that focus on where improving an individual's mental health is the primary goal of the project/service. It will only cover social and therapeutic horticulture, facilitated environmental conservation and care farming. The work will 'brigade' these interventions in order to better demonstrate their benefits, commonality and outcomes to commissioning bodies. The research will identify any barriers to the commissioning process, and look at how they might be addressed.

6.7 Developing a national indicator of connection to nature. The aim of this two year project (2015-17) is to develop and test a representative and robust national measure of connection to nature for both adults and children. Data gathered through this project would complement existing adult and child indicator data from MENE and would be tracked year on year. Sample size would allow for robust year on year comparisons and analyses of any variations between different population groups and English regions.

6.8 6.11 Evidence Project Database. A list of current access and engagement (and other) research and monitoring projects is available on Natural England's internal systems. We are currently working on making this available to everyone. In the meantime a list of Natural England's evidence projects that were current in 2014 can be seen on the National Archives at: <http://webarchive.nationalarchives.gov.uk/20140711133551/http://www.naturalengland.org.uk/our-work/evidence/register/default.aspx>.

7 Key external research programmes

7.1 Living with Environmental Change (LWEC) – this is a ten-year programme to connect natural, engineering, economic, social, medical, cultural, arts, and humanities researchers with policy-makers, business, the public, and other key stakeholders. Funded by NERC. More details: www.lwec.org.uk

7.2 Sustainable Lifestyles Research Group (SLRG) – the aims of SLRG are to understand the processes that lead to changes in people's lifestyles, behaviours and practices; and to offer evidence-based advice to policy-makers about realistic strategies to encourage more sustainable lifestyles. Core funding is provided jointly by Defra ESRC and the Scottish Government. Coordinated from the University

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of Surrey and partners include the University of Bath, Edinburgh University, the University of Sussex, the Institute for Fiscal Studies and Brunel University. More details: www.sustainablelifestyles.ac.uk/

7.3 The Nexus Network – funded by the Economic and Social Research Council (ESRC), the Nexus Network brings together researchers, policy makers, business leaders and civil society to develop collaborative projects and improve decision making on food, energy, water and the environment. The Nexus Network is a collaboration between the University of Sussex, the University of East Anglia and the Cambridge Institute for Sustainability Leadership. More details: <http://thenexusnetwork.org/>

7.4 What Works Centre for Wellbeing – a new centre which is part of the What Works Network. The centre will commission universities to research the impact that different interventions and services have on wellbeing in relation to work and learning, communities, cultural and sporting activities. The network was announced by the government in 2013, with a remit to improve the way government and other organizations create, share and high quality evidence for decision-making. More details: www.gov.uk/what-works-network

7.5 Biodiversity & Ecosystem Sustainability (BESS) – is a six-year (2011-2017) NERC research programme, supported by BBSRC, designed to answer fundamental questions about the functional role of biodiversity in key ecosystem processes and the delivery of ecosystem processes at the landscape scale. More details: www.nerc-bess.net/

7.6 Valuing Nature Programme (VNP) – this is a five year research programme aiming to understand and represent the complexities of the natural environment in valuation analyses and decision making, and to consider the wider economic, societal and cultural value of ecosystems. The current finding call focuses on managing the environment to improve human health and wellbeing. More details: www.valuing-nature.net/

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