

Sounds in and of the forest: can we connect people to nature through sound?

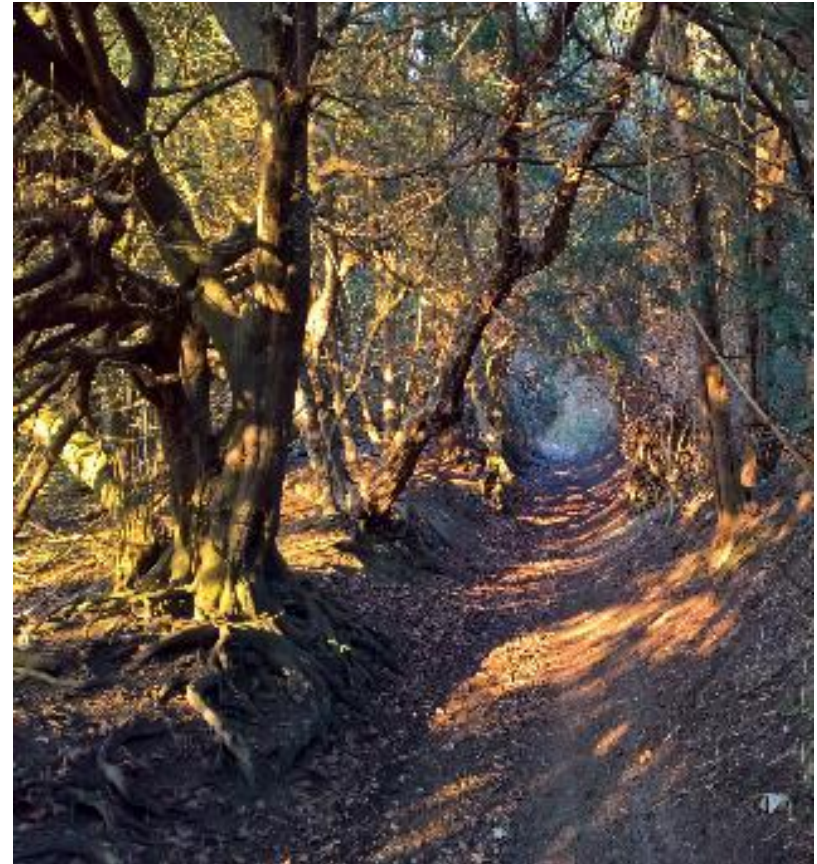
Liz O'Brien, the Ecotones Network and the ACCESS project



Sensing the Forest Webinar
November 2023



- Health and wellbeing and forests
- Ecotones network
- ACCESS project



Evidence to support forest & health policy

Forest Research contributions:

- **Conferences** to raise debate
- **Reviews** of urban greenspace health benefits /mindfulness
- **Primary research**
- **Monitoring and evaluation** of health and wellbeing interventions
- EU and international networking and **collaboration**
- **Member of steering groups** on various health and wellbeing projects



Forestry Commission England

Nov 2014 Briefing Note

We have stopped moving
Tackling physical inactivity - a role for the Public Forest Estate in England?

Forests are very highly valued by the public in England, as the consultation in 2011 that proposed selling off the value on the [FEE] brief natio to be enc to all King The infra exte at pr prop

activewoods naturally good for you

Forestry Commission England

Forest Research

Trees and woodlands
Nature's health service



Forestry Commission

Health and Well-being
Trees, Woodlands and Natural Spaces

Paul Tabbush and Liz O'Brien
Forest Research

GREEN EXERCISE
LINKING NATURE, HEALTH AND WELL-BEING

Edited by
Jo Barton, Rachel Bragg,
Carly Wood and Jules Pretty

earthscan from Routledge



Open Access Article

Engaging with Peri-Urban Woodlands in England: The Contribution to People’s Health and Well-Being and Implications for Future Management

by  Liz O'Brien ^{1,*} ,  Jake Morris ^{1,†} and  Amy Stewart ^{2,†}

Table 3. Participants’ examples of sensory aspects of woodlands they enjoyed.

| Sensory Experiences | Responses from Participants of Sensory Benefits |
|---------------------|--|
| Views/aesthetics | <i>Seeing changes in the seasons, the contrast of the tightly compacted trees, looking, scenery, children playing, views through the area of woodland, view of natural woodland with no man made items in sight.</i> |
| Sounds | <i>Birdsong, wind in the trees, rustling trees, quiet, crunchy leaves, treading on gravel, drowning of traffic noise, peaceful.</i> |
| Smells | <i>Smell of damp woods in the autumn, smell of pines, smell of rotting leaf litter, decaying bracken, smell of trees and grass.</i> |
| Texture | <i>Bark of trees, touching sculptures, diversity of textures, crunchy stones on path, soft grass.</i> |

[IJERPH | Free Full-Text | Engaging with Peri-Urban Woodlands in England: The Contribution to People’s Health and Well-Being and Implications for Future Management \(mdpi.com\)](https://www.mdpi.com/1099-4318/14/12/2142)

Situating risk in the context of a woodland visit: A Case Study on Lyme Borreliosis

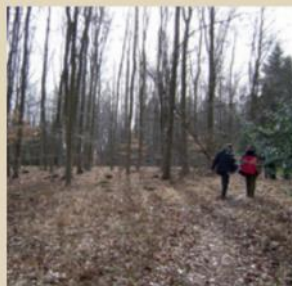
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 ****University of Surrey, Department of Psychology, Guildford, Surrey.

Summary

Figure 1.
 Photo elicitation:
 examples of the
 themes emerging
 from the photographs
 taken by participants.
 Comments were
 written by the
 participants.



Restoration and atmosphere
 'Backlit study of redwood'
 (Group 2: ages 31-50)



'View of beeches – ambience'
 (Group 3: ages 54-79)



Sensory non visual
 'Bird song' (Group 4: 50-71).
 'Love peace and quiet' (Group 2: 31-50).

Photo
 elicitation –
 benefits of
 being in
 woodlands

- Forest Research and Bat Conservation Trust – How to incorporate acoustic bat monitoring into the National Forest Inventory
 - Audio moths
 - Improving bat sound classification algorithm
 - In the pilot study 7 bat species and one species group were detected across 36 NFI plots





The project seeks new ways to communicate an awareness of environmental issues through the soundscapes of trees. It combines insights and practices from music, ecology, conservation, social science, health and wellbeing, and education to address the global challenges of urban development and environmentally sustainable growth.

[Ecotones: Soundscapes of Trees \(arcgis.com\)](https://arcgis.com)

Themes of the Ecotones network

- Music, senses and movement
- Health and wellbeing
- Education and learning

Interdisciplinary team

- Musicians, artists, educators, social and natural scientists

Activities of the network

- Workshops
 - Virtual
 - In person
 - World Forestry Congress Seoul
 - Yeongju Forest Therapy Centre
 - Devon
 - Bristol and Bath
 - Glasgow
 - Timber Festival – Timber Timbre
 - Sharing knowledge and evidence

Subjective/psychological: Much work done, both under field and laboratory conditions.

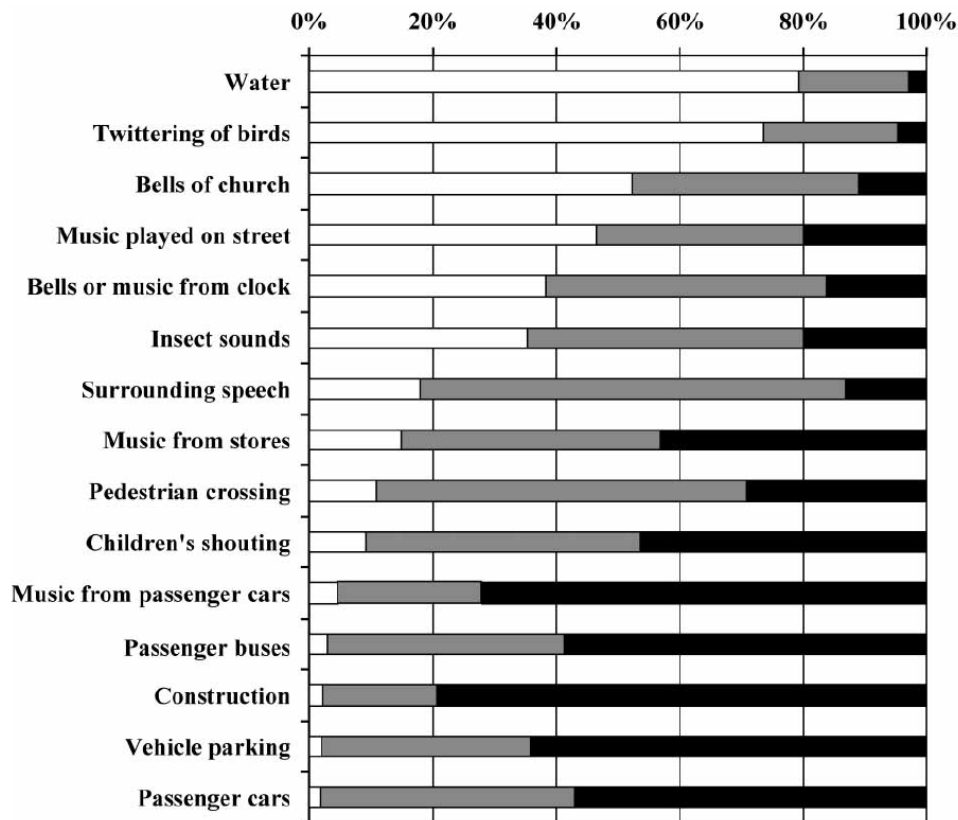


Figure 4. Interviewees' classification of the sound elements. Key: □, Favourite; ■, neither favourite nor annoying; ■, annoying.

- **Spaces/functions:** Worldwide: urban streets, urban open public spaces, parks, schools, bus stations, theme streets, cycle path, outdoor concert, racing tracks, archaeological sites, covered streets, as well as a range of indoor spaces.
- **Sound sources:** from noise sources including industrial noises, aircraft noises, road noises, wind turbines, amplified music; to positive sounds including natural sounds; to sources with mixed perception such as an infant's cry.
- **People:** the social and demographical characteristics have been considered for various users, also for specific groups such as children, deaf, hearing impaired and blind people.

Changes in:

- sound sources,
- sound propagation,
- sound preferences

| | | Alimos | | Thessaloniki | | Sesto San Giovanni | | Sheffield | | Kassel | |
|------------------------|---|--------------|----------|---------------|---------------|--------------------|----------------|---------------|--------------|-----------------|------------|
| | | Kara. Square | Seashore | Maked. Square | Kritis Square | Petazzi Square | IV Nov. Square | Peace Gardens | Barkers Pool | Florent. Square | Bahnsplatz |
| Water | F | | | | | | 27.7 | 84.0 | 74.7 | 80.3 | 74.5 |
| | N | | | | | | 66.6 | 14.8 | 20.5 | 17.9 | 22.4 |
| | A | | | | | | 5.7 | 1.2 | 4.8 | 1.8 | 3.1 |
| Insects | F | | | | | | | 37.7 | 33.2 | 34.0 | 23.5 |
| | N | | | | | | | 43.1 | 46.1 | 59.1 | 75.3 |
| | A | | | | | | | 19.2 | 20.7 | 6.9 | 1.2 |
| Bells of church | F | | | | | 31.1 | | 56.8 | 47.9 | | |
| | N | | | | | 68.9 | | 35.4 | 37.6 | | |
| | A | | | | | 0.0 | | 7.8 | 14.5 | | |
| Music played on street | F | | | | | | | 44.2 | 48.8 | 57.3 | 88.0 |
| | N | | | | | | | 38.3 | 28.8 | 27.2 | 12.0 |
| | A | | | | | | | 17.5 | 22.4 | 15.5 | 0 |
| Surrounding speech | F | 2.3 | 7.0 | | 32.2 | 23.5 | | 44.6 | 17.9 | 18.0 | 18.5 |
| | N | 77.8 | 77.6 | | 17.0 | 69.8 | | 47.2 | 68.3 | 69.3 | 80.5 |
| | A | 19.9 | 15.4 | | 50.8 | 6.7 | | 8.2 | 13.8 | 12.7 | 1.0 |
| Children's shouting | F | 20.3 | 25.5 | 54.1 | 29.5 | 27.4 | | 11.7 | 6.9 | 1.7 | 1.0 |
| | N | 54.3 | 50.8 | 19.9 | 53.0 | 53.4 | | 48.4 | 40.3 | 69.0 | 54.8 |
| | A | 25.4 | 23.7 | 26.0 | 17.5 | 19.2 | | 39.9 | 52.8 | 29.3 | 44.2 |
| Pedestrian crossing | F | 5.5 | 8.0 | | | | | 8.6 | 12.9 | 7.1 | |
| | N | 89.9 | 84.7 | | | | | 62.0 | 58.4 | 17.9 | |
| | A | 4.6 | 7.3 | | | | | 29.4 | 28.7 | 75.0 | |
| Passenger cars | F | 0.6 | | 3.5 | 31.3 | 2.7 | 1.6 | 2.4 | 1.0 | | |
| | N | 26.0 | | 53.0 | 16.6 | 59.8 | 35.4 | 38.7 | 43.6 | | |
| | A | 73.4 | | 43.5 | 52.1 | 37.5 | 63.0 | 58.9 | 55.4 | | |
| Passenger buses | F | | | 3.4 | 1.3 | | 1.6 | 3.7 | 2.1 | | |
| | N | | | 52.3 | 84.3 | | 39.2 | 38.9 | 37.9 | | |
| | A | | | 44.3 | 14.4 | | 59.2 | 57.4 | 60.0 | | |
| Vehicle parking | F | | | | | | | 2.9 | 1.0 | 1.4 | 2.0 |
| | N | | | | | | | 32.2 | 35.3 | 57.9 | 54.7 |
| | A | | | | | | | 64.9 | 63.7 | 40.7 | 43.3 |
| Construction | F | | | 2.1 | 32.5 | | | 2.2 | 2.1 | | |
| | N | | | 52.9 | 11.5 | | | 18.0 | 19.2 | | |
| | A | | | 45.0 | 56.0 | | | 79.8 | 78.7 | | |

Sound intervention experiment in urban park in China to explore whether natural sounds enhance social interaction

Natural sounds interventions resulted in higher proportion of people participating in group social interactions and more time spent on social interaction

- Living in greener environments is associated with reduced risk of a wide range of physical morbidities such as musculoskeletal conditions, respiratory disorders, and neurological problems
- Studies show forests can lower blood pressure, pulse rate, cortisol level, suppress sympathetic nervous system
- Many of the studies are from Japan, South Korea, China, Finland



- Evidence of mental health benefits with contact with greenspaces
- Influences positive emotions and decrease stress, depression, fatigue, anxiety, tension
- Improves attention, vitality, reduces cognitive load
- Recent study showing amygdala activity decreased after a 1 hr walk in a forest compared to urban env. Suggesting nature can restore people from stress
- Restoration of attention and depleted resources





- Listening to the sounds of nature



- Expressing the sounds of the forest through music
- Expressing the sounds of the forest through the voice, movement, hands, gathering objects to make a sound





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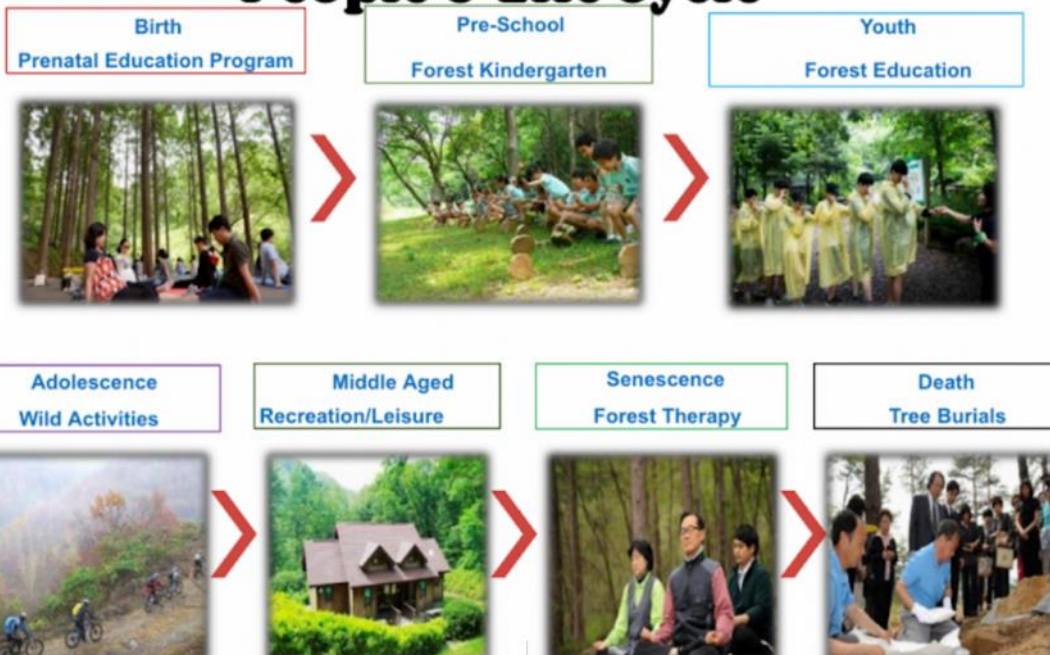
© Amanda Bayley

- Visited Korean National Institute of Forest Science—research on bird soundscapes and adaptations in sound brought about by changes in the environment and urban development



- 32 healing forests
- Over 1.5 million visitors
- Increase in forest therapy instructors
 - Programmes for depression, hypertension, cancer

Introducing Forest Welfare with People's Life Cycle

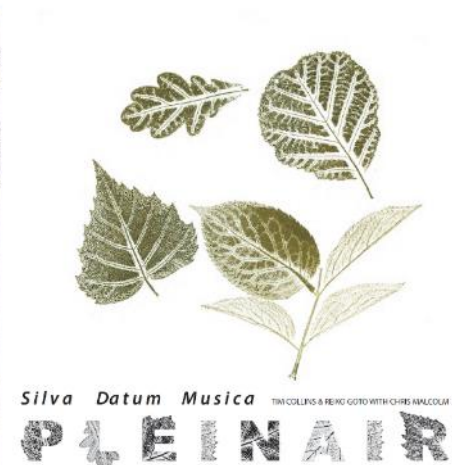


PLEIN AIR – The breath of trees (Tim and Reko Collins [COLLINS & GOTO Studio | Art and Environmental Change](http://collinsandgoto.com) (collinsandgoto.com))

- expressing photo synthesis and transpiration (representing the tree physiology artistically)



Silva Datum Musica – The Album

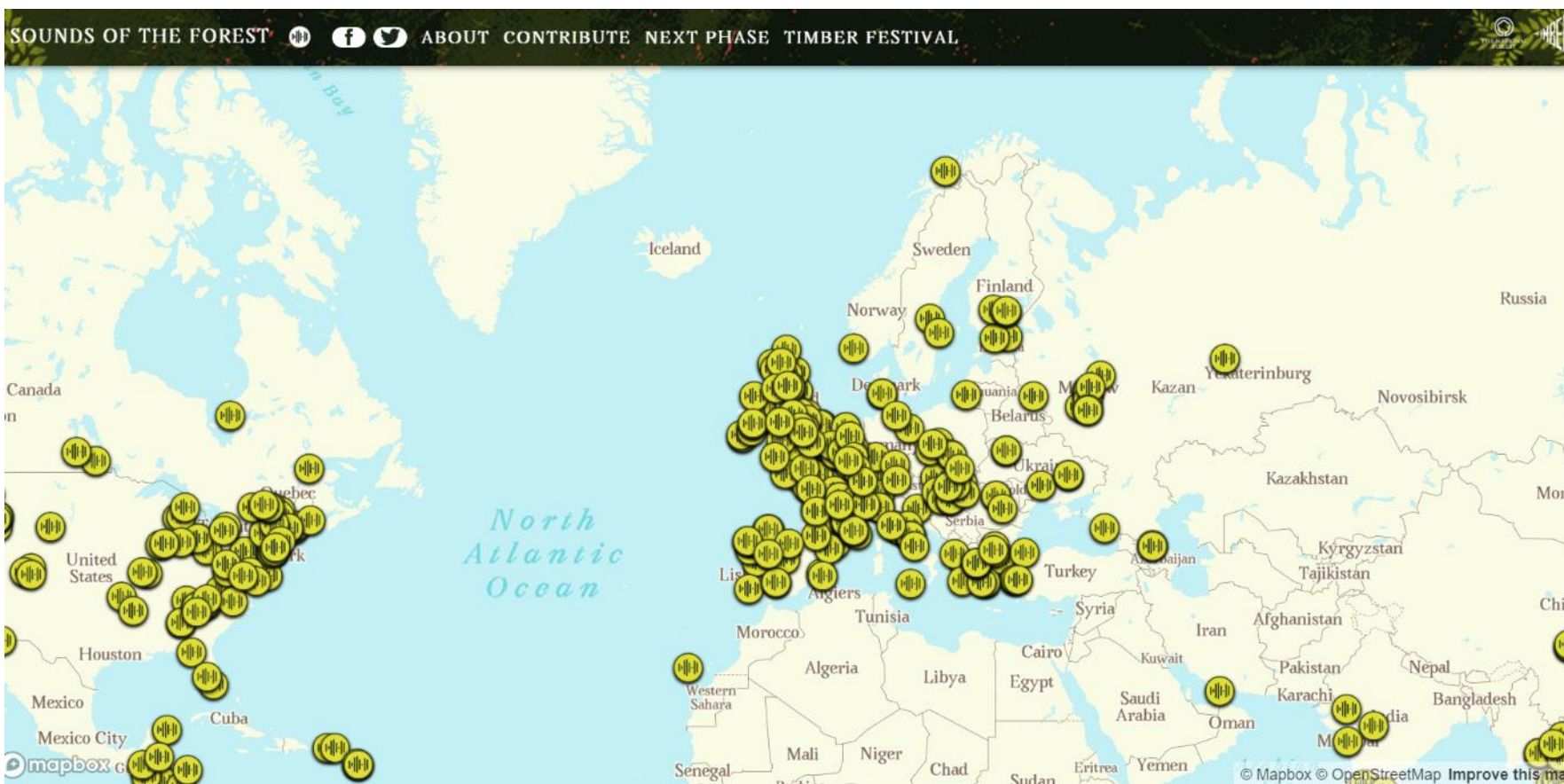


| Gathering sounds | Creating sounds | Listening to sounds | Use of nature sounds in: | Use of sounds in activities |
|---|--|--|---------------------------------|------------------------------------|
| Sound data that indicates the health of forests | Sounds created through forest objects | Connecting to forests through a focus on sounds | Hospitals | Mindfulness |
| Sounds of the forest that contribute to restoration | Sound maps of special/ local places | Slowing down and deep listening to forest sounds | Schools | Forest Bathing |
| Recording sounds of local / favourite nature places | Sonic compositions through creative activities | Dawn chorus | Airports | Forest education / Forest school |
| Sounds that explore change over time | | Tweet of the day | Petrol station toilets | Forest therapy |
| | | | | Forest listening walks |

- Use of visuals and sounds at Helsinki airport – covering 8 Finish seasons – birds, water, snow, frost, wind sounds
- A calming space in a stressful environment



Collecting the sounds of woodlands and forests from all around the world, creating a growing soundmap bringing together aural tones and textures from the world's woodlands – used to create music for [Timber Festival 2021](#)





ACCESS

Advancing Capacity for Climate and Environment Social Science

(2022 - 2027)



Patrick Devine-Wright



Birgitta Gatersleben



The challenge

- We need the social sciences if we are going to effectively tackle environmental crises
- UK social science is world class, but
- Fragmentation
- Lack of interdisciplinary skills
- Lack of agility
- Under-utilised datasets



How will ACCESS deliver transformation?

- **Map, Assess and Learn** from the past experiences of social scientists to catalyse change in policy culture, institutions, businesses and civil society.
- **Empower** environmental social scientists at different learning and career stages by providing tailored training and capacity building
- **Innovate** by creating new ideas and testing new approaches that enable social scientists to play influential, leading roles in addressing environmental challenges.
- **Champion and coordinate** environmental social scientists across the UK and internationally by providing an accessible knowledge/data hub and innovative public engagement tracker.



How ACCESS will deliver transformation

1. New toolkits
2. Multi-faceted training and coordination
3. Agile and timely response
4. Knowledge and data exchange
5. Horizon scanning
6. Integrated approach



RAPID RESPONSE STORIES

Rapid Evidence Summary to help inform Anti-racist Wales Action Plan, Welsh Government

[Read more](#)



RAPID RESPONSE STORIES

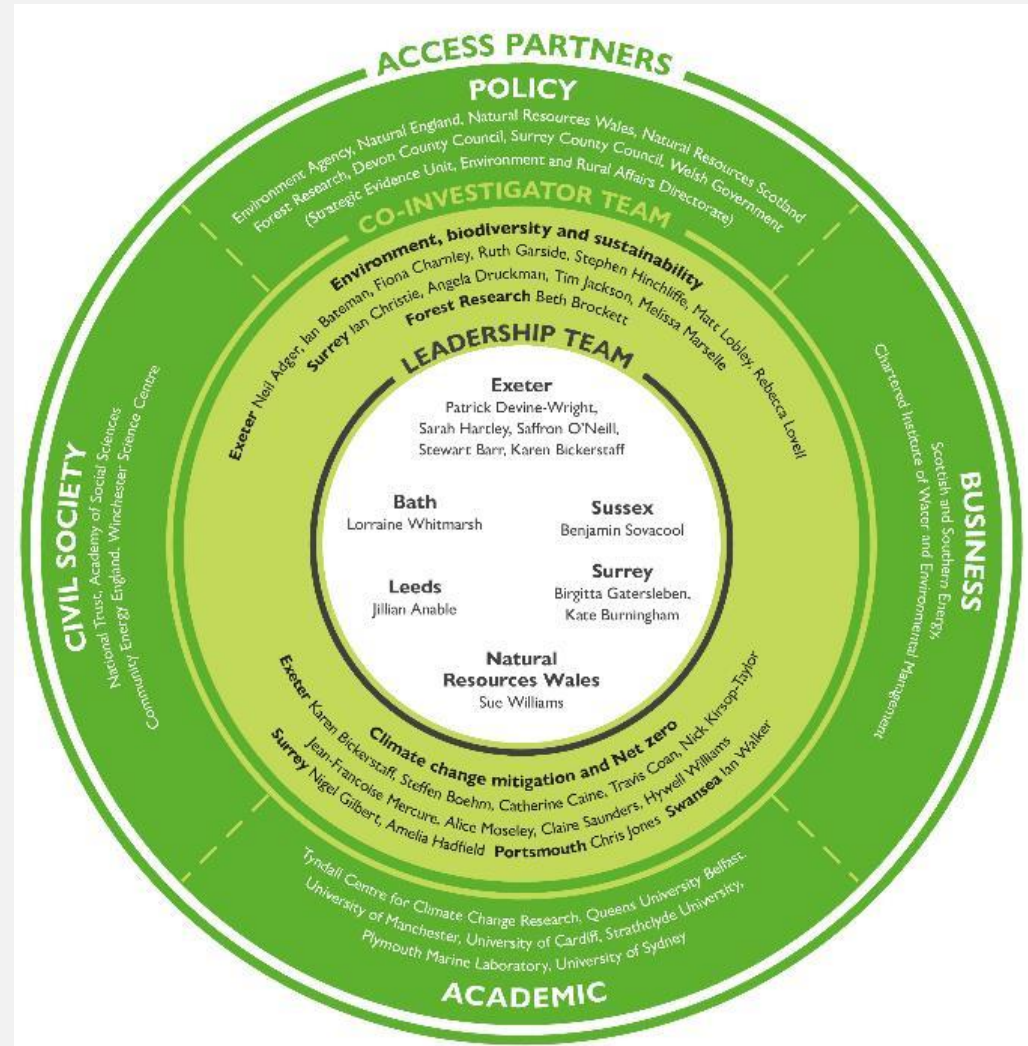
Rapid Evidence Summary of Defra's 25-Year Environment Plan

[Read more](#)

Who is in the ACCESS Team?

Join the wider network and subscribe to the weekly [ACCESS newsletter](#)

Coming soon – ACCESS Environmental Social Scientists Expert Database



More about ACCESS

- ACCESS is a five-year (2022-2027) climate and environment social science project funded by the Economic and Social Research Council (ESRC)
- You can read the ACCESS PLOS Climate Journal article [Placing people at the heart of climate action](#) which explains why social science is fundamental to helping solve the climate crisis and restore our environment.
- You can find out more on our website www.accessnetwork.uk
- Follow us on X [@_ACCESSnetwork](#) or [LinkedIn](#)



Find out more about our research

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socio economic research

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Forestry Commission Scotland
Comhairle na Coillteachraichean Ailse

NHS Health Scotland

Scottish Natural Heritage
Duilichas Nàdair na h-Alba
Wilderness for Scotland

Briefing Note

Innovative NHS Greenspace in Scotland

Green Exercise Partnership July 2014

This briefing note is based on interviews with a small number of Directors of Public Health and senior staff with responsibilities for planning and policy, estate and sustainable management in NHS Scotland in 2013. The research was undertaken to better understand the drivers and priorities faced by the interviewees and where NHS greenspace might contribute to meeting current health priorities. The work was commissioned by the Green Exercise Partnership (GEP) which comprises NHS Scotland, Forestry Commission Scotland and Scottish Natural Heritage to support the NHS greenspace demonstration programme being co-ordinated by the GEP. The briefing note also draws on GEP papers and on evaluative evidence from existing demonstration projects that have been running since 2010. While NHS greenspace was not considered core business for the NHS Scotland staff interviewed it was viewed extremely positively, contributing to a range of policies including health, well-being and biodiversity. The interviews illustrated that there is potential for greenspace design to be stipulated as an essential requirement for retrofitting existing healthcare facilities and in the creation of new facilities. This would be in line with the NHS ethos and approach over much of its history and help meet important social, environmental and economic benefits. There are exciting opportunities to use the NHS estate far more effectively to promote better health outcomes for patients, staff, visitors and the wider community.

1 



Forest Research

Valuing and governing tree and forest ecosystem services in Great Britain

This summary outlines the key results and messages from a research programme that provides new insights into how to recognise and understand the value of ecosystem services (the goods and benefits) provided by trees and forests. This work aims to inform policy-makers and practitioners, helping them make decisions about tree and forest management in urban and rural areas.

The programme is being delivered by Forest Research, with guidance from representatives from across Great Britain.



Background

There is increasing evidence that trees and forests provide multiple ecosystem services to society. However, there are challenges to understanding and eliciting the benefits gained from these services and their underlying value, and bringing them together into a format useful to policy makers and practitioners.

This programme uses new and innovative approaches to help determine these services and benefits and show how they can contribute to important government objectives such as health, education, wellbeing, civic action, biodiversity, water management and economic regeneration.

Increasingly, these services and benefits are being identified in urban and peri-urban areas and are becoming recognised by large populations within society. Understanding how these benefits affect different groups, including the public and land managers, is important for land use and land management decision-making processes. This awareness can contribute to the design of interventions and approaches that support and

help people to access and care for trees and forests; likewise, it can support land managers to create and manage woodlands for a range of ecosystem services.

This programme has three main research objectives:

1. valuing tree and forest ecosystem services;
2. mechanisms to deliver tree and forest ecosystem services;
3. changes in tree and forest ecosystem service values.

Key results and messages

1. Valuing tree and forest ecosystem services

Our research explores the value of different tree and forest ecosystem services and uses innovative methods to identify and capture those values. We expand on just three of these below, but you can learn more about the wider range of research on our website.

1



Forestry Commission England

Nov 2014

Briefing Note

We have stopped moving

Tackling physical inactivity - a role for the Public Forest Estate in England?

Forests are very highly valued by the public in England, as the consultation in 2011 that proposed selling off the **Public Forest Estate (PFE)** highlighted. The widespread outcry to the consultation showed that people value forests and access to them for many diverse reasons (O'Brien and Morris, 2013). Thousands commented on the importance of having a PFE and how the management of this resource by **Forest Enterprise England (FEE)** afforded everyone with welcoming sites and good facilities that provide opportunities for all ages. This briefing note highlights the importance of the PFE in England and the contribution it can make to tackling the national crisis of physical inactivity. The scale of this problem is enormous and is a national priority that needs to be addressed, in part, by providing many attractive locations and spaces that are suitable for, and can help in, encouraging physical activity. Inactivity is the fourth greatest risk factor for poor health in England. It contributes to almost 1 in 10 premature deaths: equal to smoking (PHE, 2014b). It is a greater cause of death in the United Kingdom (UK) than in comparable countries such as the United States, Netherlands or France.

The evidence outlined in this briefing note draws on research in forests but also greenspace and green infrastructure in which trees are often an important or key component. We conclude that the PFE in England is extremely versatile and has the potential to contribute to cost effective solutions for the health sector targeted at preventing ill health and also in recovery and treatment programmes. It is uniquely placed to replicate and provide opportunities for 'industrial-scale growth' of successful initiatives.

1 