Natural England's use of Science and Evidence: Principles and Approach

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Natural England is the statutory adviser on the natural environment in England, and our overarching purpose is "to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development." In delivering this purpose, we aim to ensure that Natural England is recognised, respected and trusted for its expertise and the provision of impartial evidence-based advice on the natural environment locally and nationally.

This document updates and supersedes our previous Evidence Strategy which ran until 2017.

What do we mean by science and evidence?

Natural England's science and evidence work involves assembling and commissioning information and using it to underpin our advice, decisions and actions. Science comprises a series of methods to produce reliable information about the world around us. In Natural England, our remit covers the natural environment; its interactions with and sustainable use by people. As such, our evidence spans - and where necessary, integrates - the natural sciences (biology, geology, geomorphology, chemistry, etc.) and the social sciences (geography, economics, psychology, sociology, etc.). Our science includes tactical and strategic research to inform both day-to-day operations and longer-term strategy.

The scientific methods we use are based on established good practice in data collection using repeatable observations, testing hypotheses, analysing results, explaining observations and drawing inferences regarding meanings and importance. The range of evidence we use comes from a variety of sources, including from scientific studies, from interaction with the scientific community, from practitioners working in the field (notably our own staff) and from the public through citizen science and other forms of engagement.

These approaches generate quantitative and qualitative data that inform our advice, decisions and actions. This information forms the basis of our evidence-base and we apply expertise in data management and spatial and statistical analysis to ensure that we extract and deliver robust information tailored to meet users' needs. In developing our science and evidence knowledge-base and capabilities we seek to innovate; developing new approaches to the gathering, analysis and use of scientific information and evidence to improve its application across the range of our activities

By way of examples, these might include mapping the uses of England's Coastal Path; analysing landscape change in Areas of Outstanding Natural Beauty; assessing the scientific importance and management of the biodiversity and geodiversity found in cave systems; and understanding changes in the distribution, status and niche requirements of protected species.

Why are science and evidence important in Natural England?

To meet our statutory purpose we need to understand the natural and cultural environments and know whether what we're doing works, by evaluating the effectiveness of actions we and others take. We need to understand the drivers and pressures acting on the natural environment and we need to know the impacts of these and how we might respond effectively.

We also need to share our evidence with others so that they can improve their own interventions and we can build a collective understanding of the basis for decision making. We need to maintain and strengthen the credibility and trust we enjoy among our partners, stakeholders and the public.

Whether we're working with a farmer to determine the optimum stocking density on a pasture; designating a protected area within a wider landscape setting; providing advice on integrating the conservation of a designated feature within a development proposal; rolling out the England Coast Path; or helping local communities to manage their local environments better, we need to access, understand and apply the best available evidence to understand identify, innovate, improve and share good practice; enabling us and others to learn and adapt, and ensure that we all use our resources wisely.

A collaborative approach

Natural England's purpose and strategy drive our interactions with partners and how we deploy our own expertise and resources. Through collaboration and drawing upon a wide and robust evidence base, our hope is that partners and stakeholders, and indeed our own staff, will feel more empowered and capable to shape and deliver shared goals and plans in flexible and adaptable ways. Together, we will also make more effective and transparent use of evidence to provide higher quality advice and better actions on the ground.

Through this collaborative approach, our aim is to ask and answer the following questions:

- ***what do we need to know?*** we will be able to scope and specify relevant questions, and to identify priorities, the major challenges and baseline evidence requirements
- ***what works?*** we will be able to identify the range of appropriate responses, understand the potential consequences and trade-offs in deciding the best course of action to achieve their outcomes
- ***what difference are we making?*** we will be able to track what impact they're having against their identified priorities
- ***how can we get better?*** we will be able to draw on learning from evaluating their activities and use this with reasonable confidence to innovate and improve what they do and how they do it

It is our ambition that those involved in developing the natural environment evidence base across the public, private, civil society and academic communities, will want to work closely and collaborate with us; pooling our resources to achieve more collectively. To facilitate this closer engagement, **we have published a summary of our science and evidence needs and offer see NE340b**. This approach to openly setting out our needs and priorities for the short to long term will support our ambition to be recognised as leaders in conservation science locally, nationally and internationally.

How will we use science and evidence?

Overall, our science and evidence will inform our decisions and activities and improve our ability to provide evidence-based advice. More specifically, we will be better able to

- understand the geographical context of a place - including natural systems such as ecosystems, services and natural capital; social and cultural aspects including societal values and local stakeholder motivations and economic drivers and circumstances
- understand the drivers of change and pressures on the environment, including climate change, air pollution, technology and infrastructure and how we can most effectively respond to them.
- inform all interventions including, adaptive strategies, policies, implementation plans and targets for improving the natural environment, its cultural heritage and the flow of social and economic benefits
- provide evaluation evidence that will help refine delivery schemes and mechanisms
- inform our work coherently at both a strategic and operational level in relation to planning and other statutory and non-statutory consultations and licensing

- ensure high quality detection, analysis and reporting of change in the natural environment, including assessing risks from potential pressures and considering mitigation and adaptation measures

- better understand how people understand, value, engage with and derive benefits from the natural environment and what future needs the organisation may need to consider

- stimulate and capture innovations in the understanding, management, and conservation and enhancement of the natural environment and the flow of social and economic benefits

- develop and deploy useful products, methods and guidance to help practitioners to engage with and apply the insights derived from science and evidence.

What are our broad principles for science and evidence?
It is our intention that:

1. **Our science and evidence programmes are fit for purpose and effectively aligned with those of partners**

   a. we identify and share our priority needs for strategic and operational science and evidence, including maintaining up-to-date summaries of evidence, targeted evidence reviews and oversight of topics across our full remit, informed by horizon scanning

   b. we target our resources at the science, evidence and related innovations we need to support our core role in providing evidence-based advice; drawing on existing science, evidence and capabilities as far as possible before making further investments

   c. we undertake effective two-way dialogue between those producing and those using evidence to ensure our science, evidence and innovation programmes are tied in with our delivery, so that we ask the right questions and learn from experience

2. **Our science and evidence and their application are quality assured, adopting standards appropriate to the context**

   a. we apply quality standards and quality assurance processes for our science and evidence that are appropriate to where and how it will be applied. Where our decisions or advice might be particularly contested we will access use independent experts to test the strength our evidence base in specific areas to help us to deliver and use the best available evidence

   b. we make clear the limitations and uncertainties in our science and evidence and help people to understand the implications of these uncertainties for their advice, decisions or actions.

3. **We access and use specialist skills, knowledge and expertise effectively**

   a. we maintain and develop the ‘deep’ specialist skills that are core to our business in the natural and social sciences, including for example, biodiversity and geodiversity, landscape, economics, behavioural sciences and natural capital

   b. we maintain and develop cross-cutting skills and capabilities that help us integrate across specialist areas and bring together evidence from science, practitioners, public groups and individuals

c. we ensure that our specialists can work effectively in partnership with other experts, innovators and users of evidence, both internally and externally to tap into the broader existing expertise and match evidence-based advice to delivery needs

4. We maximise the mutual benefits of working in partnership

a. we work with external sources of expertise and evidence both to augment our own resources and to contribute to the work of others across government, academic, industry and civil society

5. We are transparent and open about our science and evidence and communicate it effectively

a. we are impartial and consistent in how we present and communicate our science and evidence

b. we make all our evidence easily accessible through a full range of channels unless there are exceptional reasons that prevent us from doing so Access to Information Statement

c. We are clear about the balance of scientific and other information and expert judgement that has supported the decisions we make and how we have assessed and used all information sources rigorously to ensure the credibility of our evidence.

d. We make clear the nature and scale of the limitations of the evidence and help others to understand the implications of these uncertainties on advice, decisions and actions