Engaging people in biodiversity issues

Final report of the
Biodiversity Segmentation Scoping Study

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Acknowledgements

Executive Summary

The Biodiversity Segmentation Scoping Study was commissioned to support delivery of Outcome 4 of the *Biodiversity 2020* strategy: "By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action." The aims of the scoping study were to:

- make recommendations for further segmentation or other audience insight work which will help to ensure that future policy interventions and other biodiversity engagement activities are as targeted and effective (and cost effective) as possible, and thus have greatest impact

- deliver insights into key audiences which are valuable in their own right for the work of Defra (in particular the Biodiversity and Customer and Stakeholder Relationships teams) and the People Engagement Group (PEG)

Four evidence-gathering activities were carried out between October 2012 and March 2013:

- qualitative work with key stakeholders

- a review of existing segmentations, data sources and relevant literature

- a tier definition study – quantitative work to identify groups of the general population based on their engagement in biodiversity issues

- qualitative research to explore how to frame biodiversity issues in ways more likely to generate engagement, awareness and action

Defining 'engagement in biodiversity issues'

A survey and quantitative analysis were undertaken to develop a **tier definition**: a set of evidence-based criteria and decision rules that can be used to assign people from a general population into discrete groups. Five **tiers** were identified, reflecting different levels of 'engagement in biodiversity issues' – and summarised in the graphic below, which also indicates the percentage of the population in each tier.

Not Aware

Tier One 30%
Unaware of (and do not anticipate) any loss of biodiversity, either in England or the world

Aware

Tier Two 17%
Some awareness but not concerned

Tier Three 25%
Lower levels of daily life positive behaviour *with* <u>no</u> higher effort behaviours

Tier Four 18%
Higher levels of daily life positive behaviour *with* <u>no</u> higher effort behaviours
OR
Lower levels of daily life positive behaviour *with* <u>1+</u> higher effort behaviour

Tier Five 10%
Higher levels of daily life positive behaviour *with* <u>1+</u> higher effort behaviour

Lack Concern   **Express Concern**

This **tier definition** is NOT an explanatory model, and does not explain *why* people sit in particular tiers. Nor is a tier definition an 'engagement journey': it cannot be assumed that a person will move through each tier in order as their attitudes and behaviours change. The tier definition does however provide a robust basis for **indicators of engagement** in biodiversity issues, based on the percentages of the population in each tier.

A full-scale **segmentation**, building on the tier definition, would shed light both on the reasons why people sit in particular tiers and on the interventions that might change their level of engagement. The explanatory rather than merely descriptive nature of a segmentation makes it a much more strategic framework for increasing levels of biodiversity engagement in the population.

Drivers of engagement in biodiversity issues

A review of the literature identified a number of factors which could be involved in explaining different levels of engagement in biodiversity issues. These include:

Individual factors:

- Motivations and values – the things people care about, including specific species or places
- Risk perception – the belief that things one values are in some way at risk
- Knowing what to do, knowing how to do it, and believing one has the ability to do it
- Response efficacy – the belief that what one is doing will genuinely have an impact
- Sense of personal responsibility – a feeling of personal obligation to take action

Contextual factors:

- Social context, which plays an important role in shaping, modifying or driving many of the above individual factors
- Physical context, which plays a significant role in behaviour – for instance, by prompting certain types of behaviour

Experiences of nature (as an adult or as a child) have also been identified by many as a key driver of engagement with nature. However, while evidence exists of a correlation between spending time in nature and being engaged with nature, the direction of causation is not established by the evidence. Moreover, the traditional view that experience drives engagement fails to pay attention to different *kinds* of experience of nature.

Framing – or the way in which the issue at stake is presented – is a critical factor in engagement (often treated as a contextual factor). Moreover, it is the factor over which those seeking to engage people typically have most control.

A good framing works by tapping into peoples' motivations, values, and all the other individual and contextual factors listed above. It has an impact on engagement not because it provides people with additional *reasons* for action, but because it *resonates* with them in some way. For example, giving issues a local flavour is a potentially powerful way of tapping into existing values and motivations. Consistent framing of an issue (or, more commonly, a product) can, over time, create a network of resonances and associations, or brand.

The term 'biodiversity' is not currently widely recognised or understood. However, this should not be seen as grounds for further educational activity. It is not people who need to change so that they fit better with the concept of biodiversity; rather it is our framing that needs to change so that it resonates more effectively with people.

Framing biodiversity issues to increase public engagement

No framing of biodiversity issues exists in a vacuum. It interacts with everyday stories about humanity and nature which are already circulating in our culture and bumping together in people's heads.

Qualitative work identified four such everyday stories which have a bearing on the way in which biodiversity issues should be framed: two about nature, two about humanity.

The first story, **"Nature finds a way"**, turns on the remarkable capacity of natural systems to regenerate or adapt after being damaged, and presents nature as a dynamic equilibrium. The balance of nature is not a precarious *state* but an active *verb*, a function of this system. Species have important jobs, but none are irreplaceable: indeed, the history of life tells us that species loss is itself a natural process, and that lost species are replaced by new ones.

The process of growth, adaptation and recovery described by this story inspires awe and wonder in people. It can play an important and central role in a framing of biodiversity issues, with living things positioned as the products and agents of this remarkable natural process.

However, on its own, this story leads people to question whether there is really a problem – since, in the long run, nature will recover from whatever we do. This kind of reflection tends to undermine the crucial 'risk perception' element of engagement. This is one of the main reasons why the concept of 'biodiversity' is not an engaging framing.

The second story, **"Nature can't keep up"**, turns on the inevitable impact human beings have on nature. Not all human intervention is bad, as many human interventions in nature are positive; but to meet our own needs we do have to have a negative impact in many cases. The ideal is to strike a balance between negative and positive impacts, between human needs and nature. However, we are failing to strike this balance, taking too much, too fast – and not allowing time and space for the natural processes of recovery described by the "Nature finds a way" story to operate.

This second story provides the basis for the 'risk perception' missing from the first story. It does so because it keeps the focus on human timescales – unlike the first story, which describes the operation of nature over much larger timescales. A successful framing needs to work with **both stories** about nature, but to operate exclusively at the *human* level and on the *human* timeframes of the "Nature can't keep up" story. For example, the regenerative capacity of nature could be combined with the need to strike a better balance using concepts such as 'making time for nature', 'creating space for nature', or 'helping nature to help itself'.

Care is also needed in the way that the risk is framed. It is important to remember that human intervention can be positive as well as negative, to avoid focusing only on the negative impacts of human activity, and instead to celebrate the positive while highlighting the continuing imbalance between negative and positive.

The third story, **"Humanity finds a way"**, suggests that humanity will solve the problems it faces *without* having to rely on the provisioning, regulating and supporting services provided by nature. As such, this story needs to be challenged by a successful framing of biodiversity issues.

Our workshops confirmed previous research which showed stubbornly low awareness of and engagement with provisioning, regulating and supporting services. We hypothesise that this is because, on an everyday basis, we experience human spaces (cities, roads, etc) as created and maintained by *excluding* or *checking* natural processes – making it hard to get to grips with the idea that those same human spaces are in fact *dependent* on natural processes. There is a need

to *show* people how nature works for us (rather than just *telling* them that it matters or how much it is worth).

The fourth story, **"Humanity can't keep up"**, concerns not what we are doing to nature but what we are doing to ourselves. For a number of participants, experiences of nature were associated with the idea of a simpler, slower lifestyle, less hemmed in by the structures and demands of modern life. There was a concern that children in the future might lose a sense of connection with nature altogether – and a strong desire to pass on to children formative experiences and knowledge. The idea of nature as a place where one reconnects – with nature, with each other, across generations, with what really matters, with oneself – may be important for framing biodiversity issues for certain people or in certain contexts – e.g. in local community-based schemes.

Defining 'positive action'

Positive actions are actions that have a positive **impact** on biodiversity, either now or in the future. However, we need to distinguish different kinds of impact:

- Direct impacts on biodiversity

- Impacts on other agents

- Impacts on environmental pressures on biodiversity

- Impacts on the person performing the action (e.g. increased engagement)

We should also note that 'positive inaction' – refraining from an action that would have a negative impact – may be as important as 'positive action' from the narrow perspective of an arithmetic of impact.

Another way of classifying actions is not by the kind of impact they have, but by the **domain or context** in which they are taken. Such domains or contexts provide a sensible way of retaining focus in campaigns which span a number of different pro-biodiversity behaviours. They should be defined in ways that reflect how people themselves make sense of their own actions, e.g. "supermarket shopping" or "gardening".

Whenever one prioritises a particular positive action (or domain or context of action), one is by the same token identifying and prioritising a **group of people** who have the relevant *behavioural options*. This is true not only for narrowly defined priority groups, but also for the overlapping mass-market groups that we typically blur together into one ill-defined entity, the 'general public'.

Recommendations

Indicators

1.1 Indicators for public engagement in biodiversity issues should build on the tier definition approach, e.g. using the percentages of the population in each tier of the tier definition. These indicators should reflect short-term priorities. [Ch1]

1.2 Pragmatic decisions should be made regarding the selection of a baseline and methods for ongoing tracking of engagement indicators:

- Option 1: use the percentages from the tier definition as a baseline, and re-administer the questionnaire as required using a similar approach to sampling.

- Option 2: embed relevant questions from the tier definition questionnaire in a larger survey with a nationally representative sample, such as MENE. [Ch1]

I.3 Priority behaviours should be identified as indicators for 'taking positive action'. While not in a position to judge what these should be, we note that:

- An increase in the number of people merely visiting the natural environment several times a week (with no reference to the kinds of experience they are having) is unlikely to be a useful indicator.

- It is surprising that the current indicators include no actions with indirect impacts on biodiversity – such as consumer behaviour or citizen preferences – and no examples of 'positive inaction'

- There is a clear case for indicators for key behaviours by the priority groups identified in *Biodiversity 2020* (including those working in agriculture, forestry, planning and development, water management, or marine management and fisheries), and not just by those groups which are large enough to be considered the 'general public': this would be a clear way of reinforcing the interdependence of Outcome 4 with the other three Outcomes in the strategy. [Ch4]

I.4 While focused on indicators for Outcome 4 of *Biodiversity 2020*, the above recommendations are also directly relevant to JNCC work on UK-wide biodiversity indicators, in particular in relation to targets A1 and A2.

Delivery

D.1 Engagement activity should take into account the full range of factors which can influence people's level of engagement with an issue, including:

- Individual factors (motivations and values; risk perception; knowing what to do and believing one can do it; response efficacy; sense of personal responsibility)

- Contextual factors (social context; physical context)

- Framing [Ch2]

D.2 Candidate framings of biodiversity issues should be developed which:

- identify something people either already value or will readily value – something that has emotional *resonance* as opposed to something people need *reasons* to care about

- articulate clearly how that something is at risk – even if we don't *see* the threat on a daily basis

- give us a positive role as individuals in protecting or nurturing that something

- create an admirable but achievable model of the kind of person who takes on this role [Ch2]

D.3 Specifically, candidate framings of biodiversity issues should be developed which:

- invoke both stories about nature ("Nature finds a way" and "Nature can't keep up"), but stick to the human timeframes of "Nature can't keep up": for example, using concepts such as 'making time for nature', 'creating space for nature', or 'helping nature to help itself'

- tap into awe and wonder at nature's capacity to grow, adapt and recover; and position living things as the products and agents of this process

- focus on the *imbalance* between the negative and positive impacts of human actions, celebrate the positive – and don't focus exclusively on the negative

- *show* people how nature works for us – not just *tell* them it matters or how much it is worth

- draw on the idea of nature as a place where one reconnects – with nature, with each other, across generations, with what really matters, with oneself [Ch3]

D.4 Short-term engagement activity should focus on achievable goals.

- Tier 5 is an unrealistic destination for much of the population.

- Tier 2 is likely to be the hardest tier to engage.

- More realistic targets are to move people from Tier 1 into Tiers 3 or 4, and from Tier 3 into Tier 4. [Ch1]

D.5 Engagement activities should be focused on domains or contexts of action (e.g. "supermarket shopping" or "gardening") as a way of retaining focus in activities which span a number of different pro-biodiversity behaviours: these domains or contexts should be defined in ways that reflect how people themselves make sense of their own actions. [Ch4]

D.6 The assumptions being made when it is claimed that any particular action is positive for biodiversity (including actions that have long been assumed to be positive) should be explicitly spelled out and challenged. [Ch4]

D.7 As a specific example of the above recommendation: for activity which seeks to increase engagement through experiences of nature, either in adults or in children, robust theories of change which identify the *aspects* of experience of nature which actually make a difference to engagement should be developed and tested. [Ch2]

Research

R.1 A full-scale segmentation should be undertaken, building on the tier definition, to identify i) the reasons why people sit in particular tiers and ii) the most effective interventions to enhance levels of engagement with biodiversity (e.g. by closing the value-action gap). [Ch1]

R.2 This segmentation should take account of a full range of individual, contextual and framing factors, and explore how they are implicated in differing levels of engagement. [Ch2]

R.3 Further research and testing required as part of the creative process of developing a framing of biodiversity issues should be incorporated into segmentation work. [Ch3]

R.4 Decisions on priority pro-biodiversity actions (or domains and contexts of action) should be made in advance of further segmentation work and, in so far as practical, built into the design of the segmentation study. [Ch4]

R.5 Bespoke tier definitions for priority groups or sectors should also be considered. [Ch1]

Introduction

Study aims

The Biodiversity Segmentation Scoping Study was commissioned to support delivery of Outcome 4 of the *Biodiversity 2020* strategy, which states that:

> *By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action.*

The aims of the scoping study were to:

- make recommendations for further segmentation or other audience insight work which will help to ensure that future policy interventions and other biodiversity engagement activities are as targeted and effective (and cost effective) as possible, and thus have greatest impact

- deliver insights into key audiences which are valuable in their own right for the work of Defra (in particular the Biodiversity and Customer and Stakeholder Relationships teams) and the People Engagement Group (PEG)

The scoping study has been undertaken in parallel with the work of the PEG. Findings have been shared at PEG meetings, and emerging PEG priorities taken into account in both the design and reporting of the research.

Research activities

The study has comprised four key evidence-gathering activities, carried out between October 2012 and March 2013:

- qualitative work with key stakeholders

- a review of existing segmentations, data sources and relevant literature

- a tier definition, to provide a clear, robust, structured definition and grouping of the general population based on their engagement with issues surrounding loss of biodiversity

- qualitative research with groups defined using the tier definition, and with groups actively involved (in a voluntary capacity) in managing or improving local places, to explore how to frame biodiversity issues in ways more likely to generate engagement, awareness and action

Tier definition methodology – overview

Full details of the design and execution of the tier definition study can be found in the Technical Annex. Design of the questionnaire was guided by a review of existing literature. Rather than allow findings to be influenced by understandings of the word 'biodiversity', an alternative phrase, taken directly from the executive summary of *Biodiversity 2020*, was used:

> *…the variety of all life on Earth. This includes all species of animals, plants, everything that is alive on our planet.*

The study was conducted amongst a sample of 1187 England residents, aged 18-65. Online self completion interviews lasting approximately 5 minutes each were conducted amongst members of an online market research panel between 27th November and 5th December 2012. Robust numbers of responses were achieved in all age and gender groups and the data

subsequently weighted to reflect the population distribution using data from the ONS 2010-based population projections (accessed from ONS website, November 2012) before the analysis phase was conducted.

Qualitative research methodology – overview

Full details of the design and execution of the qualitative phase of work can be found in Appendix 4.

An initial round of 12 exploratory interviews was undertaken with members of the public in three locations (rural, urban, peri-urban). A further nine workshops were then carried out in the same three locations, with recruitment being guided by the outputs of the tier definition (see Chapter 1). The workshops were divided into two phases, with findings from Phase 1 being used to guide the design of Phase 2. Workshops lasted two hours and were with up to eight participants. A total of 62 participants took part in these workshops. Figure 1 below provides an overview of the nine workshops, along with the workshop codes used in quotations in this report.

Figure 1: Qualitative workshops

Location	Profile	Rural	Urban	Peri-urban
Phase 1: Tiers 3 and 4	Older (50-70), some with grandchildren, some retired	A1	B1	C1
	Parents (25-40), all with children under 10	A2	B2	C2
Phase 2: Tier 1	Mix of above profiles	A3	B3	C3

In addition to workshops, three small group discussions were carried out with individuals actively involved (in a voluntary capacity) in managing or improving local places. A total of 13 participants took part in these small groups (workshop codes X, Y and Z).

Quotations from the qualitative work are attributed in the text using the workshop code and the gender of the participant. Where dialogues are reported, numbers (e.g. m1, m2) are used to distinguish different speakers of the same gender, and 'mod' is used for moderator comments.

About this report

Chapter overview

The report is divided into four chapters and a Conclusion section.
- Chapter 1 summarises the findings of the tier definition, and discusses how this study may be used as a way of defining the concept of 'engagement in biodiversity issues'; detailed findings from the tier definition are supplied in a Technical Annex.
- Chapter 2 reviews findings from the literature regarding the factors that drive engagement, including individual factors, contextual factors, and factors relating to the way in which biodiversity issues are framed.

- Chapter 3 reviews in detail findings from the qualitative research, which explain both why the concept of biodiversity is problematic as a framing, and sets out the basis for alternative framings of biodiversity issues.
- Chapter 4 sets out key issues around the concept of 'taking positive action' which need to be taken into account in the PEG's ongoing work to prioritise key actions for biodiversity (and the groups associated with those actions).
- The Conclusion draws together themes from the preceding chapters specifically relating to the potential for further segmentation work to support delivery of Outcome 4 of *Biodiversity 2020*.

Background questions and recommendations

This study was undertaken as a contribution to the larger task of delivering Outcome 4. There are three particular areas in which we are able to make an immediate contribution:

- Indicators: what does Outcome 4 mean, and how should we measure progress against it?
- Delivery: what will it take to deliver Outcome 4?
- Research: what further research needs to be undertaken to support delivery?

These background questions cut across the report. Each of the four chapters concludes with recommendations arising from the findings in that chapter in each of the three areas.

We briefly discuss the three key questions below, and signpost some of the sections most relevant to them. A summary of our recommendations is also provided at the end of the Executive Summary, cross-referenced to relevant parts of the text.

Question 1: indicators

Outcome 4 of *Biodiversity 2020* states that:

> *By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action.*

But what exactly does this mean? What questions or observations would you ask or make to determine how 'engaged in biodiversity issues' or 'aware of the value of biodiversity' a person is, or how much 'positive action' they are taking? And how can these best be translated into meaningful indicators which can be used both to establish a baseline and to track progress against Outcome 4?

The literature suggests that 'engagement' is a complex concept, comprising knowledge, concern and behaviours, with these influenced in turn by attitudes, feelings of moral responsibility, support from others and belief in the effectiveness of one's own actions. For example, Höppner and Whitmarsh (2011) cite Lorenzoni in offering the following definition of engagement with climate change:

> *Human engagement (with climate change) may be understood as a person's state of connection (to climate change), and comprises different though interconnected aspects: cognitive, emotional and behavioural. In other words, it encompasses knowledge, concern, attitudes, risk perception and behaviour.*

By sharp contrast, at the time of writing, the indicators in use (Defra, 2012) imply that Outcome 4 can adequately be operationalised as the proportion of the population visiting the natural environment several times a week, the number of people engaging in conservation

volunteering (in a formal, recorded way), and the proportion of households undertaking wildlife gardening.

The findings in this report are also of relevance to work by the JNCC to develop UK-wide biodiversity indicators in response to the Aichi targets. Target A1 of the Aichi targets states that:

> *By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably*

While there is no explicit mention of 'engagement' in this target, awareness and action feature very clearly. Interestingly, the two relevant indicators in the current JNCC framework do not mention 'biodiversity' either:

> *A1: Awareness, understanding and support for conservation*

> *A2: Taking action for nature: volunteer time spent in conservation*

At the time of writing, the component measures for the first of these indicators are under development, though candidate datasets "primarily relate to conservation related tourism and recreational activities" (JNCC, 2012).

Getting the right indicators is not just a technical question of measurement. Good indicators also guide investment of resources, time and energy. For example, the Outcome 4 indicators above mean that efforts by the sector to increase awareness of the value of biodiversity which led to changes in consumer behaviour would *appear* to have had no impact. By contrast, a national programme to improve wellbeing by encouraging people to go for walks in the country would *appear* to be a great way of tackling biodiversity issues.

Clearly, there is a pragmatic balance to be struck here between reliability (indicators which track the outcomes targeted) and pragmatism (indicators for which reliable data can affordably be gathered, and for which a baseline is available). The current indicators for Outcome 4 meet the second of these tests, but not the first.

The following sections are of particular relevance to the topic of indicators:

- Chapter 1 offers an operationalisation of the concept of 'engagement in biodiversity issues' which provides a robust basis for indicators which are both pragmatic and reliable. Indicators are specifically discussed in §1.3.

- §4.4 argues that indicators for 'positive action' should reflect actions which are judged to be priorities. Issues to be borne in mind when setting these priorities are discussed in Chapter 4. Appendix 2 provides a summary of the 'positive actions' which have been suggested in the literature.

Question 2: delivery

One of the aims of the current study was to deliver insights into key audiences which are valuable in their own right for the work of Defra (in particular the Biodiversity and Customer and Stakeholder Relationships teams) and the People Engagement Group (PEG). In particular, we present in this report a number of findings which will be valuable to those who are engaged in actively delivering Outcome 4.

There is already a huge amount of expertise in the sector. On the other hand, it can be hard for people to find time to pull together evidence pertaining to biodiversity engagement from a wide range of different sources – especially when, as is so often the case, biodiversity is only one part of a much broader engagement or educational remit.

In this study, however, we have sought not just to collate existing findings but also – not least through our qualitative work – to deliver new insights. In particular, it was clear from the outset that one of the real challenges in this area was the concept of 'biodiversity' itself.

Insights of relevance to the delivery of Outcome 4 will be found throughout this report, but the following sections are of particular relevance:

- The tier definition presented in Chapter 1 provides a snapshot of the challenge in hand, and a basis for setting engagement priorities.

- Chapter 2 reviews the literature and offers an overview of the key factors – individual, contextual and framing – which are likely to play a part in engagement. (A more technical review of the psychological literature may be found in Appendix 1. Appendix 3 provides an overview of existing segmentations which may be of relevance.)

- Chapter 3 discusses in detail the findings from the qualitative work, and sets out the ingredients for a positive framing of biodiversity issues (while also exploring the reasons why the concept of 'biodiversity' is itself problematic).

Question 3: research

The other aim of this study was to make recommendations for further segmentation or other audience insight work which will help to ensure that future policy interventions and other biodiversity engagement activities are as targeted and effective (and cost effective) as possible, and thus have greatest impact.

Biodiversity 2020 notes that delivery of Outcome 4 will depend primarily on the activities of organisations such as those represented on the PEG, with Government playing an enabling and facilitatory role.

> *Civil society organisations play a critical front line role directly engaging and enthusing the public about biodiversity and the wider natural environment such as geodiversity […]. Government will contribute primarily by helping facilitate the sector in this role and creating the conditions whereby people are empowered to make a difference.*

It is our strongly held view that the commissioning of high quality research is one of the key ways in which Government plays this enabling role. In this study, we have sought both to provide insight, but also – as this is a scoping study – to put the spotlight on areas where more remains to be done.

Recommendations for further research are made in each of the chapters of this report, and are brought together in a full discussion of options for segmentation in the Conclusion.

1   Defining 'engagement in biodiversity issues'

Overview

In this chapter, we present an operationalisation of the concept of 'engagement in biodiversity issues' and a robust basis for pragmatic and reliable indicators of this engagement.

Our approach draws on the findings of what we call a **tier definition** – a set of evidence-based criteria and decision rules that can be used to assign people from a general population into a small number of discrete groups. Five tiers were identified reflecting different levels of 'engagement in biodiversity issues'. Full detals of the tier definition may be found in the Technical Annex.

The tier definition provides a basis for indicators of engagement in biodiversity issues, based on the percentages of the population in each tier. The tier definition structure leaves some room for choice about the precise definition of these indicators, with the final choice also depending on decisions about realistic priorities for short-term action. Pragmatic decisions also need to be made about the selection of a baseline and methods for ongoing tracking.

While invaluable as an operationalisation of 'engagement in biodiversity issues', a tier definition is NOT an explanatory model, and does not explain *why* people sit in particular tiers. Nor is a tier definition an 'engagement journey': it cannot be assumed that a person will move through each tier in order as their attitudes and behaviours change.

A full-scale **segmentation**, building on the tier definition, would shed light both on the reasons why people sit in particular tiers and on the interventions that might change their level of engagement. The explanatory rather than merely descriptive nature of a segmentation makes it a much more strategic framework for increasing levels of biodiversity engagement in the population.

1.1   About the tier definition study

1.1.1   The role of tier definition

A tier definition provides a set of criteria and decision rules that can be used to assign people from a general population into a small number of discrete groups or 'tiers'. In the current study, five tiers were identified reflecting different levels of 'engagement in biodiversity issues'. Figure 2 provides an overview of these tiers, which are discussed in more detail in §1.2.

The tier definition offers a reliable and pragmatic operationalisation of the concept of 'engagement in biodiversity issues'. The question 'How engaged in biodiversity issues is this person?' is answered by determining which tier the person sits in, which is done by asking key questions from the tiering questionnaire and applying the decision rules to the responses. Indicators for population-wide engagement can also be developed based on the percentages of the population in each tier, with changes in these percentages over time allowing us to track changing levels of engagement (see §1.3).

Crucially, the operationalisation of 'engagement in biodiversity issues' provided by the tier definition is *evidence-based*, reflecting the realities of engagement in the general population. The criteria and decision rules used to assign individuals to tiers were *not* defined in advance, but were driven by detailed analysis of the findings from the study itself. This analysis process also

involves cross-referencing with various descriptive metrics, such as attitudes and specific behaviours, to ensure the internal validity of the tier definitions, as well as cross-referencing with other sources of evidence in the literature (such as other data regarding levels of awareness, or findings around the 'value-action' gap). Full details of the analysis can be found in the Technical Annex.

Figure 2: Overview of tier definition

| Not Aware | Tier One 30% |
| | Unaware of (and do not anticipate) any loss of biodiversity, either in England or the world |

Aware

Tier Two 17%
Some awareness but not concerned

Tier Three 25%
Lower levels of daily life positive behaviour
with
<u>no</u> higher effort behaviours

Tier Four 18%
Higher levels of daily life positive behaviour
with <u>no</u> higher effort behaviours
OR
Lower levels of daily life positive behaviour
with <u>1+</u> higher effort behaviour

Tier Five 10%
Higher levels of daily life positive behaviour
with <u>1+</u> higher effort behaviour

Lack Concern   **Express Concern**

As well as underpinning the development of indicators of engagement, a tier definition can support the prioritisation of audiences and interventions, by enabling us to estimate how much effort may be required to increase the engagement of different tiers and set realistic priorities for engagement activity (see §1.3). A tier definition can also help to define what people you wish to include in the sample for further research, such as a full segmentation. In this research, the tier definition was used in recruitment for our qualitative workshops (see Appendix 4).

1.1.2   *What a tier definition is not*

While the tier definition provides an operationalisation of engagement, we must stress that it is *not* an explanatory model. No attempt is made to explain *why* people sit in particular tiers.

For example, the tier definition highlights awareness, concern and action as the key components of engagement. However, we are *in no way* suggesting here some sort of linear model, e.g. a crude equation such as 'awareness + concern = action'. An explanatory model of engagement, which would provide insight into both the reasons why people are in particular tiers and the measures which might change their level of engagement, would need to take into account a wide range of other factors – not just individual psychological factors, but also factors relating to the social and physical context of the individual. These factors are discussed further Chapter 2.

With this in mind the tier definition should not be confused with a full segmentation exercise, although superficially they may appear similar. A full segmentation should be an explanatory model, helping to explain *why* individuals belong to different groups – for instance, by identifying different motivations and needs in relation to the issues, rather than simply the extent to which they are involved in them. The explanatory, rather than merely descriptive,

nature of a full segmentation makes it a much more strategic framework for increasing levels of biodiversity engagement in the population. Segmentation is discussed further in the Conclusion of this report.

By the same token, the tier definition should not be confused with an 'engagement journey'. It cannot be assumed that a person will move through each tier in order as their attitudes and behaviours change. To take one example, once made aware of the issues the attitudes and behaviour of a person previously in Tier 1 may change so that they will be reclassified in Tier 2 (if they lack concern) or any of Tiers 3, 4 or 5 (if they are concerned and depending on the level of impact on their behaviour).

1.2   The tiers

Full details of the five tiers can be found in the Technical Annex. Note that people of both genders and all ages, social grades, regions and household compositions are present in each tier, in proportions close to the general population distribution. This suggests that engagement in biodiversity issues is not strongly associated with any specific socio-demographic profile.

1.2.1   Tier 1

The first tier is defined using awareness criteria, Tier 1 being those with no awareness of a decline in biodiversity, either in England or worldwide, nor anticipating a decline in the future. 30% of the sample fell into this tier.

Interestingly, although persons in Tier 1 do not specifically recognise an overall decline in the variety of life on either a global or national basis, they may still have some empathy with, and interest in, conservation issues. Approximately half (lower than average but still of note) agree or agree strongly that humankind has a duty to protect and support the variety of living things (a further 25% agreeing slightly) and similar levels agree that each person has an individual responsibility to take action to do this. In addition, many do feel that they know how to and are able to contribute to the support of biodiversity, even though they do not acknowledge or anticipate a problem with its decline. However, in practice, levels of day-to-day support behaviour are lower than average. A section of this tier may provide a strong target for moving up the tier structure due to their openness to the issues: further segmentation work could usefully establish how large this section is and what kinds of intervention might work.

1.2.2   Tier 2

In Tier 2, those aware of current or potential biodiversity loss are further defined by a measure of concern. Those who do not perceive any significant consequences from a loss of biodiversity, for either England or worldwide, or who lack personal concern about these consequences if they are recognised, are allocated to Tier 2. 17% of the sample fell into this tier.

The poor understanding in Tier 2 of the impact of a decline in the variety of life on earth is reflected in their less favourable attitudes towards getting involved in conservation and lower levels of day-to-day behaviours. They also tend to lack others around them who could be a positive influence. The level of knowledge of what can be done and belief in the efficacy of a change in behaviour are also comparatively low. The education and behaviour change task appears to be greater for this tier than for Tier 1, as significant barriers will need to be overcome.

1.2.3   Tier 3

The final three tiers are defined by the extent of pro-biodiversity behaviour that people report, with the pre-requisite that they are both aware of and concerned about biodiversity loss.

We used two behavioural indicators of pro-biodiversity behaviours. The first of these was a person's self reported day-to-day positive behaviour. Respondents could indicate one of the following answers with regards to what they do in their daily lives to support biodiversity:

a) very little (if anything)

b) only a few things

c) quite a lot of things

d) always make choices wherever possible

This 'day-to-day' behavioural measure was supplemented with a list of 'higher effort' behaviours. Higher effort behaviours were identified during analysis as those which both require the participant to act outside the realms of regular daily life and are adopted by only a niche group of people. For the purposes of this work they were defined as volunteering with a related project or organisation, letter-writing to urge action, participating in consultation or lobbying, setting up or leading a project, and inviting others to donate time or resources. (This list was defined through discussion with the core Defra project team).

People in Tier 3 do not report any of the higher effort behaviours, and also low levels of day-to-day behaviour. The tier is characterised by a gap between expressed concern and steps taken in everyday life to act on those concerns. To define the tier, a simple cut was made using a person's self reported measure of day-to-day positive behaviour. The split was positioned in the middle of the scale to distinguish between people who claimed that in their daily life they either "do quite a lot of things" or "always make choices wherever possible" to support and protect the variety of living things in the world from those who claimed they did "very little (if anything)" or "only a few things". Those who did very little or only a few things were allocated to Tier 3. 25% of the sample fell into this tier.

Despite the lower levels of day-to-day support activity in this tier, there remains a fairly strong belief that it is humankind's duty to support and protect the variety of life on earth. One area of activity with which this tier is more strongly engaged is supporting wildlife through encouraging birds and animals into their garden.

1.2.4   Tier 4

Like Tier 3, Tier 4 comprises people who are aware of, and concerned about, loss of biodiversity. However, in contrast to Tier 3, Tier 4 report EITHER that in their day-to-day life they do "quite a lot of things…" or "always make choices wherever possible…" to support and protect the variety of living things in the world", OR that they engage in at least one of the higher effort behaviours. 18% of the sample fell into Tier 4.

People in Tier 4 appear to be much more ready, willing and able to support and protect the variety of all life on earth. They participate in more day-to-day behaviours than the general population, with particularly encouraging levels of consideration for products and foods from sustainable sources and uptake of green energy tariffs. They are also more likely than average to have been involved in some more influential behaviours, such as financial support, signing petitions, or advising others, and to have demonstrated their interest in nature through membership of organisations, Birdwatch programmes and so on. Their knowledge levels of

how they can contribute are higher than Tiers 1 to 3 but still only one in five agree confidently that they feel well informed.

1.2.5   Tier 5

Tier 5 is a niche tier comprising people who are both highly active in their day-to-day lives and engaged in higher effort activities, as defined above. 10% of the sample fell into Tier 5.

It should be borne in mind that this tier will not be the destination for most of the general population, since only a small number will have the time, let alone the inclination, to take on these leadership or advocacy type roles. For most, Tier 4 will be a more realistic target.

People in Tier 5 have a strong belief in the efficacy of their individual actions and are likely to be surrounded by others who share their attitudes and behave in similar ways. They are the most knowledgeable tier when it comes to being aware of what actions they can take, but still only one in every three state confidently that they feel well informed.

People in Tier 5 participate in the largest number of day-to-day activities to support and protect the variety of life on earth. They particularly stand out from the general population with their consideration of seasonal or sustainable products and organic gardening behaviours. In addition to the day-to-day lifestyle behaviours, people in Tier 5 are very likely to have donated financially to a conservation organisation or signed a pro-conservation petition. They tend to be advocates, advising and persuading others, and one in three have written a letter to government or business to urge action. Half have volunteered with conservation organisations or projects in the past two years, specifically with the aim of protecting and supporting the variety of life.

1.3   Indicators for public engagement in biodiversity issues

We recommend that indicators of engagement in biodiversity issues should build on the tier definition approach, e.g. using the percentages of the population in each tier.

The tier definition structure leaves some room for choice about the precise definition of these indicators. To take just one example, one might choose to track the percentage of the population in Tier 1, with the target being that this percentage will be reduced. Alternatively, one might take the view that making people aware without their also being concerned (i.e. moving them from Tier 1 to Tier 2) is of little value, and so instead choose as one's indicator the total percentage of the population in Tiers 3, 4 and 5. Other indicators might track efforts to tackle the value-action gap – e.g. to move people from Tier 3 into Tiers 4 or 5.

The choice of indicators will be tied up here with decisions about realistic priorities for short-term action. In particular, we would suggest that:

- Tier 5 is an unrealistic destination for much of the population, making the percentage of the population in Tier 5 less helpful as an indicator than, say, an aggregate of Tiers 4 and 5.
- Tier 2 is likely to be the hardest tier to engage, making reduction of the percentage of the population in Tier 2 less helpful as an indicator than, say, reduction of the percentages of the population in Tiers 1 and 3.

Pragmatic decisions will also need to be made about the selection of a baseline and methods for ongoing tracking.

- A very simple option, requiring minimal additional resource, would be to use the percentages from this study as a baseline, and to re-administer the questionnaire as required using a similar approach to sampling.
- A potentially more powerful approach would be to embed relevant questions from the tier definition questionnaire in a larger survey with a nationally representative sample, such as MENE. This would allow tiering data to be linked to other broader data sets, while also allaying potential concerns about the use of online sampling. On the other hand, this approach would have clear budgetary implications.

1.4   Applicability to priority groups and sectors

The tier definition presented in this chapter has been developed for the general public as a whole. As is explained in *Biodiversity 2020*, in the rationale for Outcome 4, the general public are an important audience because "public understanding and opinion on the value of biodiversity has strong implications for the acceptance and adoption of conservation measures".

However, the strategy also notes the need to "consider engagement with priority groups and sectors… which have particular influence over biodiversity": for example, those working in agriculture, forestry, planning and development, water management, marine management and fisheries. People in these priority groups and sectors are also, by virtue of being people, members of the general public. To that extent, the tier definition has *some* applicability to these individuals as well, *in their capacity as* members of the public.

Problems arise, however, around the question of behaviour, for the simple reason that priority groups and sectors are defined by their having behavioural options which are not available to the wider public: for example, one cannot set aside land at the side of fields if one is not a farmer. The tier definition questionnaire explored only those behaviours which anyone might engage in as a member of the public, with the definition of Tiers 3, 4 and 5 in particular turning on analysis of these behaviours. It cannot therefore be directly applied to people in priority groups and sectors *in their capacity as* members of those priority groups and sectors.

In practice, what this will typically mean is that the tier definition is directly applicable to people in priority groups and sectors as private citizens and consumers, but not in their professional roles.

Where engagement of a priority group or sector is identified as a priority for delivery of the strategy, there may be value in developing bespoke tier definitions for the group or sector in question. Such work would need to be undertaken on a case-by-case basis, reflecting the specific behavioural options associated with each group or sector.

Recommendations from Chapter 1

Indicators: Indicators for public engagement in biodiversity issues should build on the tier definition approach, e.g. using the percentages of the population in each tier. These indicators should reflect short-term priorities.

Pragmatic decisions should be made regarding the selection of a baseline and methods for ongoing tracking of these indicators

- Option 1: use the percentages from the tier definition as a baseline, and re-administer the questionnaire as required using a similar approach to sampling.

- Option 2: embed relevant questions from the tier definition questionnaire in a larger survey with a nationally representative sample, such as MENE.

Delivery: Short-term engagement activity should focus on achievable goals.

- Tier 5 is an unrealistic destination for much of the population.

- Tier 2 is likely to be the hardest tier to engage.

- More realistic targets are to move people from Tier 1 into Tiers 3 or 4, and from Tier 3 into Tier 4.

Research: A full-scale segmentation should be undertaken, building on the tier definition, to identify i) the reasons why people sit in particular tiers and ii) the most effective interventions to enhance levels of engagement with biodiversity (e.g. by closing the value-action gap).

Bespoke tier definitions for priority groups or sectors should also be considered.

2   Drivers of engagement in biodiversity issues

Overview

As emphasised in Chapter 1, the tier definition is *not* an explanatory model. In this chapter, we review the explanatory factors which would need to be considered by such a model (e.g. a full scale segmentation) – and which, in the meantime, should be borne in mind by anyone seeking to raise levels of engagement.

First, in §2.1, we review **individual factors** relating to engagement:

- Motivations and values – the things people care about, including specific species or places
- Risk perception – the belief that things one values are in some way at risk
- Knowing what to do – and also knowing how to do it, and believing one has the ability to do it
- Response efficacy – the belief that what one is doing will genuinely have an impact on the problem
- Sense of personal responsibility – a feeling of personal obligation to take action

Next, in §2,2, we review **contextual factors** relating to engagement:

- Social context, which the evidence suggests plays an important role in shaping, modifying or driving many of the above individual factors
- Physical context, which psychological research suggests plays a significant role in behaviour – for instance, by prompting certain types of behaviour

Our aim in both of the above sections is to provide an overview of relevant factors for the general reader. A more technical discussion of the literature, including two key theories (the Theory of Planned Behaviour and Value-Belief-Norm Theory) is provided in Appendix 1. Readers with a more general interest in behavioural models are referred to the excellent review by Darnton (2008a; 2008b).

In §2.3, we turn to the question of **framing**, or the way in which the issue at stake is presented. Framing is often treated as a contextual factor, but is here treated separately – as it is often the thing over which we have most control.

A good framing works by tapping into peoples motivations, values, and all the other individual and contextual factors listed above. It has an impact on engagement not because it provides people with additional *reasons* for action, but because it *resonates* with them in some way. For example, giving issues a local flavour is a potentially powerful way of tapping into existing values and motivations. The 'ozone hole' is an example of an effective framing from the wider environmental agenda. By contrast, 'global warming' is an example of an ineffective framing.

Consistent framing of an issue (or, more commonly, a product) can, over time, create a network of resonances and associations, or brand.

The term 'biodiversity' is not widely recognised or understood. However, this should not be seen as grounds for further educational activity. It is not people who need to change so that they fit better with the concept of biodiversity; rather it is our framing that needs to change so that it resonates more effectively with people.

In the final section of this chapter, we review the evidence for the claims made for **experience of nature** (as an adult or as a child) as a key driver of engagement. While evidence of correlation exists, the direction of causation and the influence of confounding

variables is not established by the evidence. What is missing from the traditional model of experience driving engagement is *any specification of the nature of the experience*. There is a clear need to develop and test more robust theories of change, which identify the *aspects* of experiences of nature which actually make a difference to engagement.

2.1   Individual factors*

2.1.1   *Motivations and values*

People's differing motivations and values are likely to be important factors in explaining different levels of engagement in biodiversity issues.

For example, the use of flagship species to stimulate conservation, awareness and action is widespread in the sector. Charismatic species are often used to pull at the heartstrings of a person – i.e. tap into their motivations and values – in order to build engagement with wider issues of biodiversity loss. To some extent, the selection of these charismatic species will be guided by commonalities between people: in a survey covering eight European countries, for instance, Fischer et al (2009) found that "Changes in bird species were most frequently reported, but respondents also paid a lot of attention to certain types of plants (especially colourful flowers)." There are also, however, very obvious *differences* between people regarding the value they place on particular species, which will carry over into differences in the effectiveness of such approaches.

At a broader level, there is good reason to believe that people vary in the kinds of value they place on living things *in general.* In our qualitative workshops, for instance, a very small number of participants argued that other living things have a value in their own right, independently of us.

> *Animals aren't here just for us, they're there for them. [m, C2]***

But this view was not endorsed by others. In a similar vein, Futerra (2010) distinguish:
- biocentrics (a small minority) who believe nature has intrinsic value
- humanists, who believe nature has value only in relation to people
- egoists, who believe nature has value only in relation to *me*

'Place' provides another focal point for individual meaning and value for which significant differences between individuals are to be expected. As Upham et al (2009) explain, the concept of place describes "not only the physical characteristics of a location, but also the meanings and emotions associated with that location by individuals or groups." Places, like flagship species, can be important starting points for engagement – but, like species, ones which depend upon the existing diverse motivations and values of individuals.

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* It is worth noting that any effort to 'explain' human behaviour is bound to prove controversial, given the number of competing models and paradigms in existence. Even something as simple as a review of factors will involve selectivity regarding what literature is reviewed, what evidence is accepted, what is included and what is left out. The approach taken in this study sits squarely in a psychological paradigm, which treats the individual as the starting point for explanation – and which is not without well-reasoned critics (see, for example, Shove, 2010). This is not the place to engage in these (very important) theoretical debates. The reader should be aware, however, that no review of this kind can be a final word on the subject.

** See the overview of qualitative research methodology in the Introduction for an explanation of the codes used with quotations.

Differences of this kind are likely to be important factors in explaining different levels of engagement in biodiversity issues not just among the general public, but also in priority groups and sectors. For example, Fish et al (2003, cited in Lock and Cole, 2011) found that "land managers have an 'extensive and diverse' range of attachments to the landscape, many of which extend beyond the purely economic." Lock and Cole also cite the conclusion of Scott et al., (2009) that "while for land managers the 'work factor' (i.e. the role of the landscape in their work) was the key driver in their perceptions of the landscape and landscape change, there was also evidence of powerful attachments to place that reflect the land's history and a sense of protecting and/or enhancing what is there." Looking at these findings in light of Pike's (2008) segmentation of farmers, it seems very unlikely that land managers are uniform in the quality and strength of these attachments: for example, Pike's 'Custodians' (23% of the farming population) seem likely to have a far stronger sense of attachment to place than, say, the 'Modern family businesses' (41% of the farming population). Pike distinguishes two broad approaches to engagement in line with this, one more emotive, the other more rational and 'business-focused'.

The Value-Belief-Norm theory, developed by Stern et al (1999) to explain support for social movements, gives a central role to personal values. (See Appendix 1 for an overview of the Value-Belief Norm theory.) Generalising from Schwartz's work on human values (Schwarz, 1992), Stern argues that for an individual to engage with a social movement they first must accept and internalise the values of the movement itself (for instance, a basic acceptance of the primacy of nature).

Crompton (2010) puts a spotlight on the distinction between egoistic and ecocentric values. The former are driven by outcomes that are in the self-interest of the individual (e.g. reduce your energy consumption because it will save you money); the latter stem more altruistically from a concern for other living things, and ultimately derive from a greater sense of identification between the individual and environment. As well as putting values centre-stage in explaining different levels of engagement, Crompton also highlights the dangers of well-meaning campaign approaches which undermine long-term engagement by appealing to egoistic values.

2.1.2   *Risk perception*

The construct of 'risk perception' describes the belief that things one values are in some way at risk. In Value-Belief-Norm theory, for instance, an individual who has accepted and internalised the values of a movement must, in order to engage, also form the belief that things related to those values are under real threat: for instance, that the world's climate is changing, and that this change has a harmful impact on the world. Support for this notion has come from Bamberg & Moser (2007), whose results indicated that awareness of a problem was an indirect driver of behaviour, and a necessary first step in the route to behaviour change.

Some care is needed here with the concept of 'awareness of a problem', especially in relation to the tier definition discussed in the previous chapter. It will be recalled that Tier 1 is defined as those with no awareness of a decline in biodiversity, either in England or worldwide, nor anticipating a decline in the future. However, merely making these individuals aware that biodiversity is in fact declining would *not* in and of itself imply awareness of a problem: for that, individuals would also need to see this decline as putting something they personally value at risk.

It is, of course, this potential gap which the concept of ecosystem services seeks to fill, by drawing attention to the benefits provided by biodiversity and their importance to all of us. As the Natural England *Access and Engagement Strategy* notes:

> *Few people would question the relevance – to themselves or their families – of, say, the economy, or the education system, or the NHS; but the relevance of a healthy and sustainably managed natural environment, and the risk to our well-being if that environment continues to be degraded, are nowhere near as well established or clearly understood. (Natural England, 2012)*

It is worth noting, however, that this approach makes some large assumptions about the things which people value and to which a risk might be perceived: the key phrase in the quotation above being "to themselves or their families". It is precisely this kind of appeal to egoistic values with which Crompton (2010) takes issue. We discuss ecosystem services, and their role in a framing of biodiversity issues, in §3.6.

Coming from a very different angle – one that is as much at odds with Crompton's approach as with the ecosystem approach – Futerra (2010) question all approaches which "ask people to prioritise long-term and shared risks of species extinction and ecosystem destabilisation over the short-term, personal gain of continuing in their own immediate interest". Futerra's "less loss, more love" slogan represents a more fundamental questioning of the role of risk perception in engagement, and a plea for approaches which link individual values and motivations to engagement and action without the need for an intervening threat.

These are issues of live debate within the sector, and – notwithstanding the claims made by many parties to that debate – the evidence does not (in the view of the authors) settle the matter. The topic of risk perception shall be an important strand in our discussion, in Chapter 3, of approaches to framing biodiversity issues (see in particular §3.3.3 and §3.4.3).

2.1.3   *Knowing what to do and believing one can do it*

Believing that something you value is at risk may be an important factor in engagement. But clearly this belief needs to be combined with knowledge of what you can actually do to reduce that risk. Moreover, we need to tease apart some distinct elements here: the simple fact of knowing *what* one needs to do should not be confused with knowing *how* to do it, or *believing* one has the ability to do it.

Belief in one's own abilities in particular has been shown to be an important factor in driving behaviour: according to the Theory of Planned Behaviour, for instance, people need to feel that performing the necessary behaviours is within their control (perceived behavioural control) in order to form positive behavioural intentions. (See Appendix 1 for an overview of the Theory of Planned Behaviour.) In practice, this is not just about equipping people with confidence in the first place: it is also about recognising and pre-empting some of the things that may subsequently undermine that confidence and lead people to give up, such as unrealistic expectations or early failure.

> *I have tried a number of times to grow our own fruit and veg and either they have got eaten by animals, or when they've turned out, we've done carrots and you […] couldn't have made a casserole. [f, C3]*

> *Some people are unrealistic. A wildflower meadow, so it's got to look wonderful all the year round, and have all these species of plants, immediately, and of course, life isn't like that. You know, nature will take its course, and it could be many years. [f, Y]*

While statistical analysis of responses across tiers was not within the scope of this study, the tier definition appears to offer some support for the importance of knowing what to do as an element of engagement. Across the sample as a whole, 43% agreed that they were well informed about the things that can be done. Among Tier 3 – those who are aware and

concerned but not taking action – the number who feel well informed about the things that can be done falls to 32% – compared to 53% and 68% for Tiers 4 and 5.

Participants from our small groups, who were actively involved as volunteers in caring for local places, placed significant value on practical knowledge – either knowledge already in their groups (for example, one person with previous experience of growing vegetables had played a key role in teaching others in a community garden scheme) or knowledge from outside. The idea of receiving more practical guidance not just on what to do but also on how to do it was universally popular.

On the other hand, one participant sounded a note of caution about the quality of some 'expert' advice:

> *I remember, when we were planting the wildflower meadow seeds, they gave us the seeds, originally, but a lot of the seeds were not at all suitable for that area. It was obvious to somebody who was trained to know that; you only had to look at them and you knew they would never grow there. You know, so this idea that, well, they have an expert in wildflower meadows wasn't true. [f, Y]*

In this instance, the group was lucky enough to have in-house expertise. Had they not, one can guess what the impact on their collective perceived behavioural control might have been.

2.1.4   *Response efficacy*

Over and above knowing what to do it and how to do it, and having confidence in one's own abilities, one also has to believe that the thing one is doing will genuinely have the impact that it is supposed to have. This concept of response efficacy – the extent to which an individual believes that performing a given behaviour will lead to the specific desired response – is an important element of Value-Belief-Norm Theory.

Thornton (2009) asked participants to rate the statement "There is nothing I can personally do to help protect the UK's biodiversity" (biodiversity had previously been defined as: "Biodiversity is the variety of living things and the natural environments that support them"). Only 7% strongly agreed with this statement (i.e. felt there was nothing they could do), with 19% tending to agree; at the other end of the spectrum 16% strongly disagreed, with 29% tending to disagree.

A similar pattern of response was apparent among respondents in the tier definition, which indicates that belief that one can do something to help may be higher among the most engaged tiers: for example 38% of Tier 5 strongly disagreed with the idea that there was nothing they could to do help, compared to 16% of the sample as a whole.

The concept of response efficacy is an important strand in the argument put forward by Futerra (2010) against the overuse of 'loss' messages – such as messages about extinction.

> *Doom and gloom messaging that is designed to scare people into action more often switches them into apathy. It's easy to understand why individuals feel powerless in the face of a global mass extinction crisis. And if you use the negative message too often, people can even withhold their attention as well as their will to act.*

It is worth noting, however, that the problem here attaches not to loss messages *per se*, but to loss messages without associated and credible calls to positive action. As one participant in our qualitative workshops put it:

> *I understand about having it [the message about species extinction] force-fed us, but that is just giving us problems every day and we need solutions. Too much negative,*

you switch off in the end, you need the positive to sort of think 'OK well what can I do about it? What can I do today that will make a difference?' [f, B3]

2.1.5   *Sense of personal responsibility*

According to Value-Belief-Norm theory, engagement requires one further ingredient: a sense of personal responsibility to take action. In the theory, this final condition is related to personal norms, which are defined specifically as "feelings of personal obligation that are linked to self-expectations".

Once again, the tier definition study provides some apparent support for the idea that personal responsibility is an important factor in engagement. For example, 47% of Tier 5 expressed strong agreement with the statement "Each person has an individual responsibility to take action to help", compared to 19% of the sample as a whole.

A number of studies appear to show quite high levels of agreement with the idea that humans have a duty or moral responsibility to protect biodiversity – higher, indeed, than agreement with the idea that biodiversity has some kind of instrumental value (for instance, as a result of the services it provides). For instance, Thornton (2009) aksed respondents to rank the importance of four reasons to conserve biodiversity. 65% ranked "We all have a duty to minimise our impacts on nature and the planet" as either their first or second most important reason, while this was the least likely reason to appear in 3rd or 4th rank (see Figure 3).

Figure 3: Reasons why it is important to conserve biodiversity (Thornton, 2009)

	Selected as **1st or 2nd** most important	Selected as **3rd or 4th** most important
We all have a duty to minimise our impacts on nature and the planet.	65%	35%
We cannot afford to lose species that might one day provide medical or other benefits we have not yet discovered.	52%	48%
It contributes to the quality of our air and water.	51%	49%
It makes green open spaces more pleasant places to visit.	33%	67%

Base: All omnibus respondents (1,772)

What the above numbers do not indicate is *why* people felt they had this duty, or *to whom or what* the duty is held. In this respect, our qualitative workshops yielded some interesting clues – although it must be remembered that recruitment for these workshops was focused on specific lifestages, in particular parents with young children and grandparents, and that this undoubtedly shaped responses. For many of our participants, concepts such as 'morality' and 'duty' tended immediately to prompt discussion of future generations: we may have a duty to look after nature, but that duty is held not *to* nature or living things, but *to* the human beings who will come after us (starting with our own children):

You want to leave this earth in a better condition than when you came onto it, for the other people to carry on. Isn't that everybody's nirvana? That's what we're all hoping for. [m, A1]

It's like a moral obligation to protect something that's so beautiful... preserve it for future generations. If species die out I think it is on ourselves, we'll feel bad about it if

we don't try and do something to prevent it for other people. We are taking away, not their choice, but their quality of life, they aren't having the opportunity to experience the things we've experienced because we have done nothing to change how we live to prevent something from happening. [m, C2]

Equally prevalent, however, was a line of reasoning which linked moral concepts to the fact that we, as human beings, are the most powerful species on the planet and (probably) the only species capable of thinking.

We are the governors at the moment, the ruling creature. So as a ruling creature, like an employer, you should have respect for your people and as such be humanitarian in all ways. You look after what you are empowered to look after rather than just using what you can take. You are empowered to look after these creatures and plant life and the planet. We are the ones that are empowered, the human race, so we just have a moral responsibility. [m, B1]

I think that now we can't deny we have the knowledge, and with the knowledge comes the morality. […] The average wandering badger-cum-whatever else hasn't got any ability to, but with knowledge comes the moral ground. [m, A2]

We are at the top of the food chain, so if we don't do something about it who will? There is nobody above us, so if we don't look after it and make sure species don't die out, who will? [f, C2]

There is some indication that this second perspective aligned more closely with the term 'responsibility', as opposed to terms like 'morality' and 'duty'. However, there was no sense of conflict or tension between the two perspectives, with many participants subscribing to both and some interchangeability of concepts and language.

2.2   Contextual factors

2.2.1   Social context

Human beings are social animals, and social context is an important factor in human behaviour. Each of the individual factors discussed above can be considered to have a social dimension or underpinning.

To take just one example, a sense of personal responsibility may derive from internalised group norms – patterns of accepted behaviour and/or expectations within a group. Alternatively, a group can provide the context which turns a sense of personal responsibility into action. For example, in a study focused on reducing water usage (Dickerson, 1992), getting people to make a verbal commitment to take shorter showers to save water did not, by itself, shorten shower times; but when participants were then reminded of their poor behaviour and made a *public* commitment to take shorter showers, their behaviour did change. Work by Schwarz and Shuva (1992, cited by Stern et al, 1999) suggests that a sense of personal responsibility will be further increased when (i) there is an abiding sense of group fate, (ii) there is a belief in the viability of group action as a strategy to avert the perceived threat, and (iii) individuals see themselves as having as much capacity to act as other group members.

A similar social story could be elaborated around the other key concepts discussed: motivations and values, risk perception and response efficacy.

For example, workshop responses remind us that response efficacy may be heavily influenced by social context, and the belief that others are doing their bit. On their own, one's actions may have limited impact; but as part of a coordinated movement they may be very important.

> *We can kind of do our bit, even if it is a small bit. Like recycling. That is probably all I do, but that's a start. And five years ago nobody recycled, now we all recycle. It's natural. Well it is for me anyway. [f, B2]*

Local schemes can play an important role in providing this social context and concrete examples of 'doing one's bit' as part of a greater whole.

> *Everybody's doing their little bit. It doesn't matter how small their contribution, especially in our garden. [m, Z]*

The behaviour of leaders – locally, nationally or internationally – is also important, setting a clear example of good behaviour.

> *As long as you don't go back to them and say: "Well, they do understand the need for change and things…" It's not an excuse for our Lords and Masters to sit on their arses and do nothing. [m, A3]*

As another example, social motivations can play an important role in volunteering, helping individuals to initiate or maintain pro-biodiversity patterns of behaviour. For example, an evaluation of biological recording projects by the Heritage Lottery Fund found that "Particular mention was made by some volunteers of the enhancement of their social skills, by virtue of their […] being able to talk and work with a group of like-minded individuals who didn't think of them as cranky (unlike some friends and relatives)" (Millward & Pisolkar, 2008).

The importance of finding like-minded people was also mentioned by some participants in our qualitative workshops – for instance, commenting on their experiences of hearing other people's views through the workshop format:

> *It's nice to know that people do feel strongly about it, and it's not just a complete apathy culture about the issues. [m, A3]*

> *I really enjoyed coming here to hear everybody, and I think it's great, and it makes me feel part of a community of people that… we all think the same, and that makes me feel strong. [f, A2]*

Turning to the tier definition, it is striking that 74% of tier 5 agreed with the statement "I have friends or family who are trying to help achieve this", compared to only 31% of Tier 3.

Psychologists typically build aspects of social context into their models by treating them as elements of individual psychology. For example, in the Theory of Planned Behaviour, social norms are defined as *perceived* social pressure from important others to perform (or not perform) a given behaviour – shifting attention from the social reality (actual pressure to behave in a certain way) to the individual's perceptions of that reality. Social identity – the degree to which an individual identifies as part of the group in question – is another example of an individual construct reflecting social phenomena. Individuals may be motivated to deploy strategies which improve or protect the status of groups with which they identify.

Arguably one of the most important social context factors is lifestage. Milestones such as starting work, entering a relationship, having a child or retirement alter radically an individual's social context and understanding of their role in that context. Lifestage can also be associated with changes in physical context – the subject of the next section.

2.2.2   *Physical context*

Physical context has long been recognised as a source of potential barriers to action. For example, a key factor in the promotion of recycling behaviour has been the provision of roadside recycling facilities which make recycling physically easier. In one study in west London, for instance, the availability of kerb-side recycling facilities was the only factor that differentiated high and low recyclers. (Thomas, 2004)

Psychological research has also amassed a compelling body of evidence to demonstrate that, through mechanisms such as priming, context plays a much greater role in *prompting* behaviour than was previously assumed – or, indeed, than most of us want to believe. Rebranded as 'behavioural economics', these findings have been popularised in recent years by books such as *Nudge* – to the extent that, while there is probably no-one left who denies the importance of physical context, there are now some who argue that efforts to influence behaviour by influencing individual psychological factors are essentially misguided.

While the authors do not share this view, the importance of physical context is not to be underestimated. The point can be illustrated with findings from Thornton (2009). When asked about the level of thought they gave to the loss of biodiversity (the variety of living things and the natural environments that support them), members of the public reported that consideration was low (Figure 4). Once prompted to give the topic thought by having to respond to a survey, however, a large proportion reported being concerned about the loss of biodiversity in the world, with over half strongly agreeing that they worried about the loss of species in the world, and more than 8 in 10 agreeing overall (Figure 5). In one sense we can say that these participants are worried about biodiversity loss, but most of them are clearly *not* worrying on a daily basis. What makes the difference is a *prompt* – provided in this instance by the survey itself.

Such a prompt can be provided by context: and in this respect, it is important to bear in mind that 'positive actions' for biodiversity may take place in a wide variety of different settings or contexts, which may be more or less likely to provide the requisite prompt. For example, someone may well worry about the loss of biodiversity while filling in a questionnaire on the topic, walking in the countryside, or watching natural history programmes – yet fail to think about the issue while in a supermarket or a shopping centre. In such a case, moreover, the

Figure 4: Level of thought given to biodiversity (Thornton, 2009)

	2009 %
Thought given to loss of biodiversity in the UK…	
A great deal	7
A fair amount	14
A little	25
Not really given this any thought	49
Don't know	6
Thought given to loss of biodiversity elsewhere in world…	
A great deal	7
A fair amount	14
A little	24
Not really given this any thought	49
Don't know	6
Base: All omnibus respondents (2009 - 1,772 / 2007 – 1,661)	

Figure 5: Agreement with statements about worry related to biodiversity loss (Thornton, 2009)
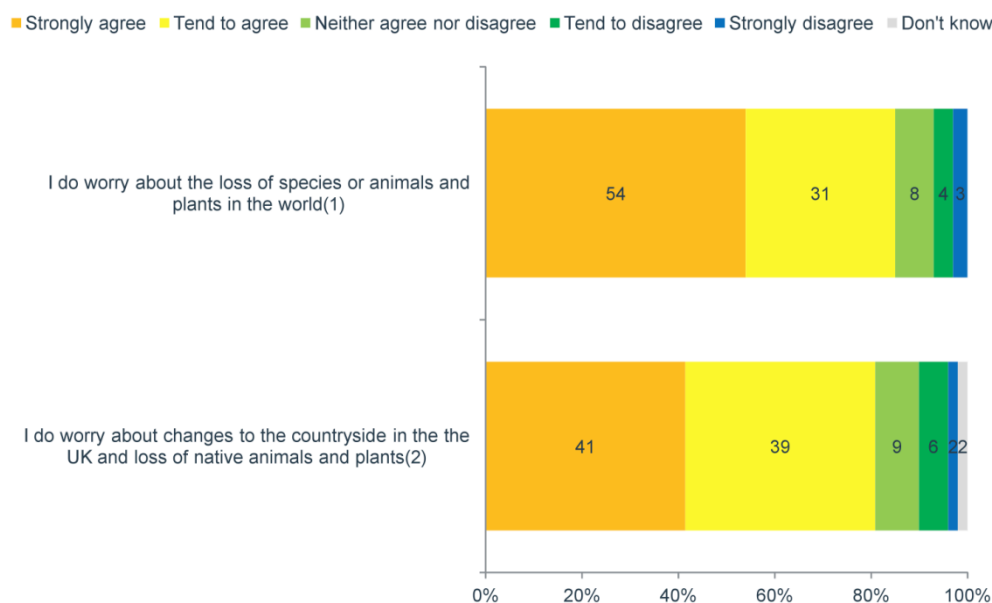
Base: (1)All respondents (2,009) / (2)All omnibus respondents (1,772)

most effective intervention may not be to change the person's *mind* in some way, but to change the relevant *contexts* to ensure that their concern is prompted at the critical moment, e.g. by a labelling scheme.

Before leaving the topic of context, it is worth clearing up one potential misapprehension. 'Behavioural economics' is sometimes criticised on the grounds that it is 'manipulative' and therefore unethical: one is changing the context to achieve an outcome without the agreement of those who are influenced. This is a profound misunderstanding. The (uncomfortable) lesson from psychology is that there is no such thing as an 'unvarnished truth' or 'neutral choice'. Whenever one delivers a message or offers a choice, one influences the outcome by doing so in one way rather than another. The one thing that is clearly unethical is ignoring the mass of evidence in this area and pretending that this kind of influence is somehow optional.

2.3   Framing

2.3.1   *Resonance, not reasons*

So far we have considered two classes of factor which could have an impact on an individual's level of engagement: factors in the individual themselves, and factors in their context. At first sight, this appears to be a comprehensive distinction. Indeed, what we call framing – the way in which the issue with which engagement is sought is presented – is often treated under the general heading of context. However, we have chosen to treat it separately for the following simple reason: even when those seeking to increase engagement with an issue have little or no direct control over individuals and their context (as is often they case), they still have a large degree of control over how they frame the issue.

Effective framings of an issue work by aligning with or activating individual or contextual factors of the kinds that we have already covered. They have an impact on engagement not because

they provide people with additional *reasons* for action, but because they *resonate* with them in some way. For example, Crompton (2010) draws attention to the ways in which different framings of the same issue may serve to activate and reinforce different sets of values.

The wider environmental agenda provides some good examples of effective and ineffective framings of issues. A particularly successful one was the 'ozone hole'. As many websites on the subject are at pains to point out, there is in fact no hole: the technically accurate construct is 'ozone depletion'. But the idea of a hole in a protective layer resonates well with people, and provided such an effective focus for engagement that to this day it is not uncommon in qualitative workshops to hear people link climate change to the ozone hole. By contrast, 'global warming' has been a rather unsuccessful framing of an issue: it does not fit with our everyday experiences, and it actually sounds rather pleasant. It is to be hoped that the recent reframing of climate change in terms of 'global weirding' will be much more successful on both counts.

Consistent framing of an issue (or, more commonly, a product) can, over time, create a network of resonances and associations, or brand. Futerra (2010), whose "love not loss" slogan is an example of a framing recommendation based on claims about human psychology, present an interesting argument that the relative unfamiliarity of the term 'biodiversity' represents an opportunity to develop a brand around the term:

> *Brands also start out as empty words, but they are filled with meaning by communicators and their audiences. They act as simple retrieval cues, representing a much larger body of information. They are a shortcut to what inspires their audience. Consumer brands don't just sell products, they sell a set of brand values and promises which resonate powerfully with specific people.*

The importance of consistency in building and maintaining a brand should not, however, be underestimated. Commercial organisations, for example, invest considerable resources in developing and policing this consistency.

2.3.2   *Making it local: an example of framing*

Many people (though by no means all) feel a strong sense of attachment to local places, making local framings of biodiversity issues a potentially powerful way of tapping into existing values and motivations. For example, Edcoms (2008) note that one of the key principles underpinning the BBC *Breathing Places* scheme was that:

> *'my patch' is a very powerful concept. Making the local environment nicer is more relevant than abstract concepts of global conservation or sustainable development.*

In some situations, flagship species and local places can be linked to provide a potentially powerful hook for local engagement. Futerra (2010), for example, argue that:

> *Biodiversity is a global issue but local messages are far more likely to resonate with people. Local plants and animals provide a more familiar, relevant and visceral connection for your audience, and local biodiversity provides a platform from which to connect to global issues.*

The power of the local as a motivator was clear in our workshops, and in particular in our small groups with people involved as volunteers in caring for local places. These were not biodiversity schemes *per se*, and for many participants the motivation for taking part was as much about building the local community (see §3.7.3). But living things were perceived as

integral to the quality of those spaces – and some animals in particular could come to feel almost a part of the community themselves.

> *Every year, we usually watch the swans that nest, and I think it's probably been the same pair of swans bringing up babies year on year, that people round here just see them year on year, and year on year you see the new cygnets, and then you see the slightly older ones being pushed out of the nest and sent away. And we've had years when they've nested around the corner there, and then tragedy when the river's risen and the nest has been washed away. And I think there is a sort of… you know, there's a sort of soap opera feel to it, almost, isn't there? It goes on year after year, which I think is so attractive. [f, Y]*

Another participant in the same group mirrored the point made by Futerra, arguing that what was needed was for people to connect to *local* issues rather than global ones, and to recognise that living things are under threat in the UK as well.

> *It's easy to say, oh, well, we'll save polar bears and tigers, but I think the hedgehogs are our local equivalents, and I think children need to know that they've got things here that they're responsible for, in the same way as people who live in Siberia.*

The concern expressed by this participant is supported by the evidence. In practice, biodiversity loss seems to be associated by many people (in Europe) with *other parts of the world.* For instance, a survey of public perceptions of biodiversity change in 8 European countries (Fischer et al, 2009) found that, although there were concerns about the decrease in the number of plant and animal species, these concerns were stronger with regard to global than with regard to local changes: "biodiversity loss at the global level was a shared concern, whilst local changes were seen as more complex, including the re-appearance of species that had previously been under pressure". Similarly, qualitative research in the UK (Define Research and Insight, 2007) found that global problems, such as climate change, were top of mind, while other major issues, such as deforestation, were felt to be affecting far off countries: "Most respondents displayed a poor awareness of domestic environmental issues and, furthermore, expressed little belief or concern that the environment was under serious threat within the UK." In the tier definition, 26% of respondents felt that biodiversity was 'decreasing a lot' in the world as a whole, with only 14% thinking it was decreasing a lot in the UK (although, partly reflecting this, the number who felt that biodiversity was 'decreasing a little' in the UK was slightly higher, at 30% compared to 24%).

While the point that follows remains speculative, it seems plausible that this pattern of belief may reflect the *framing* of biodiversity issues over recent decades. As Upham et al (Upham, 2009) note:

> *risk perception may be understood not only as a product of psychological processes, but also of broader social, institutional and cultural factors. These include the ways in which risks are communicated, institutional and social trust, and cultural myths and local contextual factors.*

The claim that follows is *not* based on a rigorous review of content: but it seems to the authors that many of the most compelling representations of species or natural places at risk are drawn from far off, exotic locations. To offer one anecdotal example, a recent BBC broadcast, *Attenborough's Ark*, highlighted a number of important biodiversity issues such as the need to create a resilient network of habitats to support a population: but of the ten animals selected to join the Ark, not one was from the UK. Not only does this global framing of biodiversity issues risk detaching the topic from powerful motivations linked to local places, it may also risk diminishing other key factors such as response efficacy and personal responsibility.

Our intention in making this point is not to belittle the significant achievements of past decades of communication about conservation and the natural world, but to encourage communicators continually to refresh the framing of biodiversity issues to ensure maximum resonance.

2.3.3   Framing biodiversity

When it comes to engagement in biodiversity issues, one of the fundamental challenges for framing is posed by the concept of biodiversity itself. There is a general recognition in the sector that the term 'biodiversity' does not provide the most effective starting point for engaging people in biodiversity issues. The evidence supports this view, consistently suggesting that the term is neither widely recognised nor well understood.

For example, qualitative research in England (Define Research and Insight, 2007) found that:

> the term 'Biodiversity' was not understood, and even when explained was still not engaging. While respondents understood that "variety is the spice of life" and, as such, biodiversity might be important, the term lacked any real sense of benefit without providing extensive detail (which they found too boring).

A similar picture emerges from earlier research projects in Scotland and Northern Ireland. Research in Northern Ireland (Annett & Spouncer, 2004) found that "only 16% of people surveyed had heard of the word biodiversity and only a few of those were able to state what it meant. In all only one in ten adults could be said to have had an adequate understanding of the term". Similarly, research for Scottish Natural Heritage (IAS SMARTS, 2006), which tested a number of related terminologies including 'biodiversity', found that in Scotland only around one in three of the population was aware of the term.

More recent quantitative surveying (Thornton, 2009) supports these findings. Respondents were asked how much they knew about the term biodiversity. The question was asked without providing respondents with a definition of what biodiversity was. "Just over one in ten in total knew either a lot about it (3%) or a fair amount about it (8%). Around one fifth (19%) said they knew just a little and 17% said they knew nothing about it but had heard of the name. Half (50%) said that they knew nothing about it and had never heard of 'biodiversity'.".

Europe-wide research in early 2010 showed that levels of awareness in the UK positioned it in the mid range amongst other countries. In this research, 62% of EU citizens did not know the exact meaning of the term *biodiversity* or had never heard of the term. (Gallup Organisation, 2010). In line with this, the Union for Ethical BioTrade's most recent Biodiversity Barometer (UEBT, 2013) reports that 20% of respondents in the UK gave "correct definitions" of the term, with a futher 19% offering "partial definitions": 36% had not actually heard of biodiversity.

One possible response to these findings would be to redouble efforts to explain to people what biodiversity is and why it matters. Such a response locates the engagement 'problem' firmly in individual factors (knowledge and understanding) and focuses precious energies and resources on measures designed to change these factors. A quick, unscientific review of biodiversity-related websites suggests that this remains a popular strategy among those seeking to 'engage' people, with site after site offering explanations of what biodiversity is and why it matters.

We would argue strongly that this kind of approach represents a fundamental misunderstanding of the challenge that needs to be addressed. Rather than see the 'problem' as lying in individuals, we would argue that it lies in the framing of biodiversity issues. It is not

people who need to change so that they fit better with the concept; rather it is our framing that needs to change so that it resonates more effectively with people.

The reasons why we take this view are more fully explained in Chapter 3, which explores in more detail the ways in which the concept of biodiversity fails to resonate with everyday ways of experiencing and making sense of living things in nature.

Over and above setting out problems with the concept of biodiversity, however, the next chapter also has a positive purpose: to provide an evidence base for the development of a more successful framing of biodiversity issues. That framing, we suggest, should be developed with the various engagement factors discussed in this chapter firmly in mind.

In particular, we would suggest that a successful framing of biodiversity issues needs to:

- identify something people either already value or will readily value – something that has emotional *resonance* (motivations and values) as opposed to something people need *reasons* to care about

- articulate clearly how that something is at risk – even if we don't *see* the threat on a daily basis (risk perception)

- give us a positive role as individuals in protecting or nurturing that something (knowing what to do, response efficacy)

- create an admirable but achievable model of the kind of person who takes on this role (personal responsibility, social norms/identity)

On the other hand, the framing must also remain close enough to the actual concept of biodiversity to retain a link with the real issues. To give a very crude example, many people care deeply about 'pleasant green spaces' in their local area. This may lead them to lobby their local council to plant manicured lawns and box trees, or to complain about untidy wildflower meadows. 'Pleasant green spaces' do not, by this test, provide the focus for a successful framing of biodiversity issues.

2.4   Experience of nature as a driver of engagement

2.4.1   A plausible story…

There appears to be – or at least to have been – a fairly widespread belief in the sector that *experiencing* nature at first hand leads to increasing *engagement* with nature. Natural England's *Access and Engagement Strategy*, for example, notes that "to some extent engagement has been seen as an automatic consequence of investment in access" (Natural England, 2012a).

A recent manifestation of this belief is to be found in the *Biodiversity 2020* strategy:

> *The level of direct contact with nature is a factor in influencing attitudes towards it, suggesting that the more we can stimulate interest in and access to nature, the more people will be willing to contribute to its protection and enhancement.*

There is, moreover, an intuitively plausible 'causal story' to explain this supposed influence: experience of nature leads a person to understand and value it more, and these things in turn feed into increased engagement. Better still, it may be argued, this increased engagement is likely to drive more visits, fuelling a 'virtuous circle' of engagement.

Analysis of MENE data suggests that there is indeed a correlation between the number of visits a person takes to the natural environment (experience) and their level of concern about

damage to the natural environment (a possible component of engagement). "37% of those who claim to visit at least once a week agreed strongly they were concerned, while just over a quarter (27%) of those who visit less than once a month or never agreed strongly with the statement." (Natural England, 2012b). Analysis by Burt et al (2012) suggests this pattern may replicated at the level of social groups, with those groups that visit the natural environment more also having more positive attitudes towards the natural environment.

2.4.2   ...but a lack of proof

The problem, of course, is that *correlation* does not imply *causation*. The MENE data does not in fact show that "direct contact with nature is a factor in *influencing* attitudes towards it" (our emphasis) any more than it shows that attitudes toward nature are a factor in influencing the level of contact a person has (an equally plausible story). The causal arrow could flow in either direction; or in both directions; or both the level of contact and attitudes might be influenced by some third variable.

In the absence of concrete evidence, the historical assumption that experience drives engagement has in recent years been critically examined. For example, Natural England's *Access and Engagement Strategy* points out that:

> *Engagement sometimes follows on from enjoyment, but this progression is by no means automatic and cannot be relied on as the core of our engagement strategy. (Natural England, 2012a)*

If this is true for engagement with the natural environment in general, then even more so for engagement with biodiversity issues. Meanwhile, partners in the biodiversity partnership are also questioning the 'virtuous circle' story as a driver of genuine engagement:

> *Most people probably continue round a loop that involves experiencing nature, leading them to value it, leading to them seeking more experience of it, etc, without ever wanting to understand it more, or to act on its behalf. (Nigel Doar, private communication)*

For clarity, we are not here saying that visiting and enjoying the natural environment do *not* have an impact on levels of engagement with nature in general or biodiversity issues more specifically. We are reporting a lack of any robust evidence that they *do*. Such a causal link could be established by, for example, a programme of research with appropriate quasi-experimental designs.

2.4.3   Different types of experience of nature

Of course, *anecdotal* evidence for the hypothesised causal relationship between experience and engagement abounds: and while anecdotal evidence cannot establish a causal connection, this is not to say that it has no value. What is missing from the traditional model of experience driving engagement, we would suggest, is the *lack of any specification of the nature of the experience*. There is no discrimination between walking your dog in the park on the one hand, and taking part in a Bioblitz on the other.

If this suggestion is correct, then it is not the fact that you visit the natural environment that has an impact on your level of engagement, but what you do while you're there; not the fact that you enjoy nature that makes a difference, but *what about it* you enjoy and *why*. Or as Nigel Doar puts it: "the thing that drives their further interaction with nature is the amount and *type* of value that they place on nature as a result of their interaction(s) with it" (private communication, our emphasis).

A number of previous studies have drawn attention to the different kinds of experience which nature can afford to people. Many of these focus on the different kinds of benefit or 'cultural service' which experiences of nature can afford. For example, Lock and Cole (2011) cite a framework developed by Research Box which distinguishes three classes of cultural service:

- 'nuts and bolts' services (such as leisure activities, sense of place, sense of history and learning) that appeal to people's rational and physical interests
- more unstructured and perhaps 'self generated' services (such as escape and calming) that deliver benefits on an emotional level
- more special and unusual experiences (inspiration and spirituality) that occur rarely, in specific situations, and tend to offer a deeper level of 'service'

Church et al (2011) offer a classification of cultural goods with some similar features, distinguishing leisure, recreation and tourism goods; health goods; heritage goods; education and ecological knowledge goods; and religious and spiritual goods. Define Research (2007) offer another classification, based on analysis of participants' unprompted responses, of the ways in which the environment contributes to quality of life: freedom, relaxation, health, hobbies.

Based on responses from our own qualitative workshops, we would largely endorse the Research Box framework discussed by Lock and Cole. Our key criticism of their framework is their inclusion of 'sense of place' and 'sense of history' in a category that is otherwise focused on people's rational and physical interests. The responses of our participants suggested very distinct forms of experience here, with those focused on memory and history having a strongly emotional quality.

> *In childhood I used to be climbing trees, going fishing, being right in the middle of it, spending the whole summer there. I wish my kids would do the same, but it isn't as easy as it was then. Just having it. Going back to the seasons, summer time having picnics with family, big kiddies tea parties. Every time I go there I get déjà vu, every part of [place name] is another memory of childhood coming back to me. [m, B2]*

> *The quietness, the stillness, it's just like an essence of a memory of my childhood, because I lived in the country and we used to go down country roads and have that freedom. I think, when I say freedom, I think it's because going back to my own childhood [when] we used to go out and play we didn't have to worry about people, we didn't have to worry about cars, we knew what we could touch, we didn't go back in until it was dusk, and if it was getting late we could hear someone calling us […] Just echoes of childhood. [f, A1]*

Experiences such as these share with Research Box's third category of 'more special and unusual experiences' the fact that they prompt an individual to step back from their immediate experience and reflect on themselves in a larger context. The difference lies in the scale of that larger context – with examples such as those given above involving reflection on a human scale, as opposed to the cosmic scale of experiences such as the one following:

> *It [nature] puts one's own self into, that it… no human being is important in the run of things, in the greater, the greater cosmos. And nature just reminds you of that. I mean, I've been doing quite a bit of walking lately, and it brings alive things that you perhaps mightn't have thought about, like, a snail's pace. I went through the churchyard and I saw a snail on the wall, and I walked for 45 minutes before I came back, and that snail had managed to move two inches. [f, A3]*

Figure 6: Types of experience of nature

	Type of experience	Features of nature which support this experience	Potential role for living things in the experience	Rsrch Box equivalent
Immediate	Entertainment and diversion	Variety and amenity. Depending on the needs of the individual, experiences at this level may be significantly improved by the provision of non-natural amenities such as toilets and cafés.	Objects of possible interest and variation *I've seen buzzards round there, and badgers, things like that. [...] It's really nice to see some different things. [m, A2] That's part of the reason why we all love being in those spaces, because it's like, what are you going to see? [...] Wildlife is very much part of that. And the beauty of the seasons, you know, in the plants, that's very much part of it, the time of the year, when you see things, what to look out for. [f, Y]*	'Nuts and bolts' services, but excluding 'sense of place' and 'sense of history'
	Escape	Points of contrast with urban environments, e.g. green vs grey, slow vs fast, quiet vs noisy, few people vs crowded. Non-natural amenities likely to conflict with the experience.	As sources of contrast – in particular, the greenery of vegetation, but also relating to sound, movement and behaviour *There is a different type of movement, to me there is still movement but it is a different pace and a different type. [...] whether it's the breeze in the grass or a river or birds flying around or trees moving. [m, B2]*	More unstructured and perhaps 'self-generated' services
Reflective	Identity and grounding	Meaning attached to aspects of specific natural places, in particular personal memories (or evocation of remembered places), collective histories, or current communities.	Focal points for meaning/memory *I remember spiders and beetles, whatever might be in the ground – you are thinking yeah, this is great. [...] That feeling that you are the first person to find this – look at this! [m, B1]*	-
	Transcendence	Evidence of natural processes operating over long timescales, and independently of human activity. Examples of human activity being swept aside by natural processes.	Emblems of a larger, non-human world *It gives you a sense that you are not the only organisms on the planet, we do think man is god sometimes and you know it gives you an idea of other animals, other creatures. [m, B1]*	More special and unusual experiences

Building on Research Box, we present in Figure 6 a revised framework for experiences of nature, which clearly distinguishes experiences which are 'in the moment' from those which involve a degree of reflection. Given the focus of the current research, we include in this table an indication of the roles that living things may play in each of these types of experience.

2.4.4   *Experiences as 'moments of change'*

It is important to distinguish the reasons why a person takes part in a particular activity from the value and benefits they ascribe to that activity subsequently, and the revised values and motivations they may take into the future.

For example, someone may join a voluntary scheme primarily for social reasons. They probably have some initial affinity for the issues the scheme addresses; but through participation this affinity may develop into a deep passion, one which outlasts involvement and spills over into other domains of life. People's values and motivations develop over time, and experiences can serve as the 'moments of change' on this journey.

MENE data provides what may be an example of this kind of process at work:

> *'Learning something about the outdoors' was only cited as a reason for 2% of visits. However, in response to a question about outcomes from their visit, responses were much more positive, with 10% strongly agreeing and 26% agreeing that they had actually learned something new about the natural world. (Natural England, 2012a)*

We believe that experiences can play a critical role in driving increased engagement, both with nature in general and with biodiversity issues in particular. What we lack is a good understanding of *how* experiences play this function, and what kinds of experiences are therefore needed to drive engagement. There is a clear need to develop and test more robust theories of change, which identify the *aspects* of experience of nature which actually make a difference to engagement.

2.4.5   *Childhood experiences and adult engagement*

An argument along the lines of the one set out in §2.4.1 has also been made with respect to a second, related belief that is widespread in the sector: that children's experiences of nature have a longer term impact on their engagement with nature as adults.

For instance, Wooley et al (2009) note the "consensus that childhood experience of nature has a major impact on adults' values and behaviour towards the natural environment" and usefully review a number of studies which appear to provide supporting evidence. Futerra (2010) assert that: "Research on adults who care about biodiversity reveals the single most important factor behind taking action is an emotionally powerful childhood experience of nature, from a visit to a city farm to stroking a wild animal."

Once again, however, the evidence establishes correlation at best, and not causation. In this instance, of course, a reverse direction of causation can safely be ruled out: a person's values and attitudes as an adult clearly do not have an impact on their experiences as a child. But the possibility of a hidden variable seems not to have been addressed by any of the studies cited.

For example, one US study (Wells & Lekies, 2006) found that:

> *childhood participation in "wild" nature such as hiking or playing in the woods, camping, and hunting or fishing, as well as participation with "domesticated" nature such as picking flowers or produce, planting trees or seeds, and caring for plants in childhood have a positive relationship to adult environmental attitudes. "Wild nature"*

> *participation is also positively associated with environmental behaviours while "domesticated nature" experiences are marginally related to environmental behaviours.*

On this basis, the authors conclude that "childhood participation with nature may set an individual on a trajectory toward adult environmentalism".

The flaw in this argument can be exposed by considering a simple question: did the participants *choose* the activities they participated in as children. If *yes*, then the correlation could equally well be interpreted as the endurance of a pre-existing set of values and attitudes from childhood into adult, shaping their behaviour patterns when young and their environmental attitudes when older. If *no*, then it is likely that their behaviour as children was largely chosen for them by parents or other significant adults who themselves had a strong relationship with nature. The attitudes and values of these adults could then be invoked to explain both the childhood behaviour patterns and the attitudes when older. Either way, a highly plausible hidden variable exists, and the causal connection has not been proven.

The studies reviewed in this area face a further (methodological) challenge in that none of them are longitudinal. Instead, they rely on adult memories of childhood experiences. And while it is nonsensical to suggest that a person's values and attitudes as an adult have any impact on their experiences as a child, those values and attitudes clearly could have a very strong impact on what they *remember* of those experiences. At best, these studies establish a correlation between pro-environmental attitudes and *vivid recall* of childhood experiences in nature.

Once again, we are not here saying that childhood experiences of the natural environment have *no* impact on adult values and attitudes. Rather we are reporting a lack of any *robust evidence* that they do, or regarding what aspects of those experiences might actually make a difference.

Recommendations from Chapter 2

Indicators: n/a

Delivery: Engagement activity should take into account the full range of factors which can influence people's level of engagement with an issue, including:

- Individual factors (motivations and values; risk perception; knowing what to do and believing one can do it; response efficacy; sense of personal responsibility)

- Contextual factors (social context; physical context)

- Framing

Candidate framings of biodiversity issues should be developed which:

- identify something people either already value or will readily value – something that has emotional *resonance* as opposed to something people need *reasons* to care about

- articulate clearly how that something is at risk – even if we don't *see* the threat on a daily basis

- give us a positive role as individuals in protecting or nurturing that something

- create an admirable but achievable model of the kind of person who takes on this role

For activity which seeks to increase engagement through experiences of nature, either in adults or in children, robust theories of change which identify the *aspects* of experience of nature which actually make a difference to engagement should be developed and tested.

Research: A full-scale segmentation should take account of a full range of individual, contextual and framing factors, and explore how they are implicated in differing levels of engagement.

3   Framing biodiversity issues to increase public engagement

Overview

In this chapter we draw on evidence from our qualitative workshops to explain why the concept of 'biodiversity' has not served as an effective framing for biodiversity issues, and to provide the basis for the development of a more successful framing.

At the level of everyday **experience**, the concept of biodiversity is an odd one for many people. People are of course aware that there is a wide variety of living things in nature. But the concept of biodiversity goes beyond saying that *there is* a variety to ask *how much* variety there is, and this is not an intuitive way of thinking for many people.

At a more **intellectual level,** many people appear to have a well-developed 'everyday concept' of biodiversity: they understand that different living things have different roles to play in the functioning of an interconnected, balanced system. There is also a recognition of the likelihood of knock-on consequences if any particular species is removed from the picture.

To understand why this everyday concept of biodiversity does not provide a good framing, we need to take account of two everyday stories about nature – ways in which people understand not just living things in nature, but the broader concept of nature itself. These stories are NOT recommended framings, but the context in which such a framing needs to succeed: stories *with* which it needs to resonate, and *between* which it needs to navigate.

The first story, **"Nature finds a way"**, turns on the remarkable capacity of natural systems to regenerate and adapt after being damaged, and presents nature as a dynamic equilibrium. Damage is not permanent because the system will find its equilibrium again – although after a serious catastrophe, such as a comet hitting, this new equilibrium may be radically different. The balance of nature is not a precarious *state* but an active *verb*, a function of this system. Species have important jobs, but none are irreplaceable: indeed, the history of life tells us that species loss is itself a natural process, and that lost species are replaced by new ones.

Combined with the everyday concept of biodiversity, this first story undermines risk perception, by asserting that nature will (in the long run) find a new balance. On the other hand, the process of growth, adaptation and recovery described by this story inspires awe and wonder in people, giving it an important and central role in a framing of biodiversity issues – with living things, in all their variety, positioned as the products and agents of this remarkable natural process.

The second story, **"Nature can't keep up"**, turns on the inescapable impact that human beings have on nature. Humans need to take things from nature, and inevitably have an impact by doing so. Not all human intervention is bad, however: many human interventions in nature are positive. The ideal is to strike a balance between negative and positive, between human needs and nature. However, we are failing to strike this balance, taking too much, too fast – and so not allowing time and space for the natural processes of recovery described by the "Nature finds a way" story to operate.

This second story provides a clear basis for risk perception. However, real care is needed in the way that that risk is framed. It is important to remember that human intervention can be positive as well as negative, to avoid focusing only on the negative impacts of human activity, and instead to highlight the imbalance between negative and positive.

While at first sight these two stories about nature appear to contradict each other, they in fact

operate at different levels and on different timescales. Our hypothesis is that the everyday concept of biodiversity automatically prompts reflection at the level of the "Nature finds a way" story (as opposed to, say, examples of human-caused species loss, which tend to prompt reflection at the level of the "Nature can't keep up" story). Unfortunately, the "Nature finds a way" story also implies that biodiversity cannot be at risk (at least on the timescales on which the story operates). This is why biodiversity is not a good framing concept.

A successful framing needs to work with **both stories** about nature, but to operate exclusively at the *human* level and on the *human* timeframes of the "Nature can't keep up" story. For example, the regenerative capacity of nature could be combined with the need to strike a better balance using concepts such as 'making time for nature', 'creating space for nature', or 'helping nature to help itself'.

Alongside the two stories about nature described above, two stories about humanity which emerged from our workshops are also discussed.

The first of these, **"Humanity finds a way"**, suggests that humanity will solve the problems it faces *without* having to rely on on the provisioning, regulating and supporting services provided by nature – and as such needs to be challenged by a successful framing of biodiversity. Our workshops confirmed previous research which showed stubbornly low awareness of and engagement with these services (with a few exceptions – see below).

We hypothesise that this is because, on an everyday basis, we experience human spaces (cities, roads, etc) as created and maintained by *excluding* or *checking* natural processes – making it hard to get to grips with the idea that those same human spaces are in fact *dependent* on natural processes. There is a need to *show* people how nature works for us (rather than just *telling* them that it matters or how much it is worth). Provisioning, regulating and supporting services need to be brought into the realm of everyday experience – in so far as is possible – in the same way that cultural services already are.

Supporting this view are the few cases where people already have a good working picture or metaphor of how nature works for us: pollination by bees, and the role of rainforests/trees as the 'lungs of the earth'. These are the exceptions noted above – the examples of services with which people are able to engage, because they are able really to understand *how* we depend on nature.

The second story about humanity, **"Humanity can't keep up"**, concerns not what we are doing to nature but what we are doing to ourselves. For a number of participants, experiences of nature were associated with the idea of a simpler, slower lifestyle, less hemmed in by the structures and demands of modern life. Participants recognised this is not a practical option for real life, but felt there was something they could take from their experiences of 'getting back to nature'. There was also a concern that children in the future might lose a sense of connection with nature altogether – and a strong associated desire to pass on to children formative experiences and knowledge. The idea of nature as a place where one reconnects – with nature, with each other, across generations, with what really matters, with oneself – may be important for framing biodiversity issues for certain people or in certain contexts – e.g. in local community-based schemes.

It should be remembered throughout this chapter that our workshops were conducted with specific, defined groups – parents with younger children, and people aged 50-70 – drawn from Tiers 1, 3 and 4 of the tier definition (see Appendix 4). These groups were chosen as the most important and promising candidates for engagement. Further research would be valuable before generalising the findings in this chapter to the whole population.

3.1   Experiencing living things in nature

3.1.1   *A reflexive exercise for readers of this report*

Before going any further, we encourage readers to engage in a brief exercise in reflexive analysis: to think about the ways in which they experience and make sense of living things in nature, and to reflect on the ways in which those may or may not be atypical of the population as a whole.

Engaging with nature is not a single, homogenous activity: it is a multitude of very different activities which just happen to share a common site. People spend time in natural settings (or experience those settings indirectly, say through television) for all sorts of different reasons; and depending on their particular motivations and purposes – the activity they are engaged in – they will perceive what they see differently, foreground different things in different ways, attach different meanings and associations to those things, while leaving others in the background, unattended to. In short, they will experience and make sense of nature in general, and the living things in nature in particular, in completely different ways.

Consider, for example, the following people walking through a wood:
- A local resident walking their dog on a regular route
- An office worker seeking creative inspiration by taking some time out
- A visitor on holiday in the area
- A keen photographer
- A forager looking for edible food
- A forester monitoring the biodiversity of the area
- A forester on their day off

Consider also the different levels and kinds of attention these different people will pay to living things and to other aspects of their surroundings; *which* living things they will foreground (if any); which will remain part of the background of their experience; what the foregrounded living things will mean to them.

Our hypothesis is that many readers of this research will (at least for some of the time) experience and make sense of living things in nature in ways that make the concept of biodiversity a relatively easy one to grasp, even – one might say – a *natural* one. If *you* are one of these readers, we invite you imaginatively to explore the genuinely different perspectives of others as you read what follows.

3.1.2   *Modes of experiencing living things in nature*

Living things are inherently fascinating, both as the focal points for individual experiences and as talking points for people to share.

> *I've been mesmerised by the wildlife, and the busy-ness of it when I'm on my own in the countryside. It just takes you away to another place. If you're sitting on the grass and you start to get covered in ants, you begin to notice other things down there as well, not just ants, other creepy-crawlies. [f, A1]*
>
> m: *You still see a fox. I mean I'm sure we've all seen urban foxes. I like that, I do like that, I see them quite often.*
> f: *It reminds you that, you know, that nature is still there.*
>   *[…]*

> m: *I do like that…yeah, because I am urban, it's kind of bringing the country to me. [B1]*

> *The most amazing thing is, I do the same walk quite regularly, but the changes throughout the year, which I love. […] So my walk, though often it's the same walk, it's always changing, constantly changing. [f, A1]*

> *I think it is an ancient connection, I think it is a primeval part of us. My God, I am in danger of sounding like a hippie! But I wonder if it is that kind of thing, in our roots. That kind of connection, it's subconscious. [m, C1]*

However, this shared fascination does not mean that we all pay attention to living things in the same way, or to all living things, or all of the time. Using the simple idea that any experience involves certain elements which are foregrounded against a background which comprises all the other elements, we identified three broad modes of experiencing living things in nature:

1. **Actively discriminating.** Certain purposes and activities involve an individual in actively looking out for and distinguishing specific types of living thing. Depending on the specifics of the activity, other living things may remain in the background. For example, a birdwatcher actively foregrounds and discriminates birds, but pays little or no attention to plant life. Only a few of our participants indicated these kinds of specific personal interest.

2. **Receptively attentive.** Without looking for anything in particular, individuals may also adopt a broad, unfocused awareness which opens them up to noticing things they may not otherwise have noticed, including living things. The quotation above, which describes being "taken away to another place" and starting to notice "other creepy-crawlies" is an example of this kind of mode of experience.

3. **Unconsciously monitoring.** Workshop conversations suggest that for many people, for much of the time, living things are firmly in the background – part of the wider experience of nature, but not specific focal points. The green of plants, the sound of birds – these are intrinsic elements of one's experience, but not usually foregrounded. At any moment, however, a living thing may be foregrounded – usually if it does something interesting or noteworthy. Larger animals in particular are likely to draw one's attention in this way.

3.1.3   The variety of life: fact or variable

The idea that there is a variety of living things in nature makes sense in any of these modes of experiencing. Everyone can recognise and, at times, marvel at the diversity of living things.

But biodiversity is *not* just a fancy way of saying that there is a variety of living things in nature. Crucially, the concept of biodiversity treats this variety as something like a variable, albeit one without units: a quantity that can go up or go down. It moves beyond saying that *there is* a variety, and asks *how much* variety there is.

At the experiential level, we believe that it is this aspect of biodiversity that makes the concept a rather odd one for many people. For instance, in our exploratory interviews we found that people struggled to engage with questions about what might happen if the variety of life in a natural place they had identified were reduced, tending to offer all-or-nothing answers along the lines that, if there were *no* living things, it would no longer be the same place. The variety of life in nature makes ready sense as a fact, but not – for many people – as a continuous variable.

However, we suspect that this is not the case for individuals who regularly experience living things in nature in what we have called an actively discriminating mode. For a keen birdwatcher, for example, the '*how much*' of variety – albeit within one specific class of animals – is itself an important feature of their experience; and the idea of that variable increasing or decreasing over time an easy one to grasp.

For clarity, we are absolutely not saying here that most people cannot understand the idea of variety as a variable: and in the next section we will turn to the question of how people make sense of that idea at a more intellectual level. The point we are making is that for some people – including, we suspect, many of those seeking to increase engagement with biodiversity – the concept has an *experiential* dimension which is lacking for many other people.

3.2   Making sense of living things in nature

3.2.1   *An everyday concept of biodiversity?*

In the last section, we argued that biodiversity, as a variable, is an experientially odd concept for many people. But surely they can still make sense of it at a more intellectual level? The term itself, as we have seen (§2.3.3), is not widely recognised or understood; but, as Fischer et al (2009) note: "Understanding biodiversity is not the same as knowing the word 'biodiversity'".

For example, the same qualitative research which found that "the term 'Biodiversity' was not understood, and even when explained was still not engaging" also reports that "The idea of living in a system where components interrelate makes sense; and the concept is best understood when described in a very simple way" (Define Research and Insight, 2007). This concept of interconnectedness is also apparent in qualitative work conducted by Fischer & Young (2007) – although it should be noted that this research, conducted in the Cairngorms, explores the pre-existing concepts of groups such as mountaineers, farmers and birdwatchers which, given our comments above on different modes of experience, are probably not typical of the wider population. As one of their participants put it:

> *"It is just to keep the natural flow! That is why it needs to be protected! If you do away with one species it affects another species." (Fischer & Young, 2007)*

As well as recognising the interconnectedness of living things, participants in this research also had a well developed concept of a natural balance between different populations. This same concept was prominent in a survey covering eight European countries (one of which was Scotland):

> *Population increases or the (re-)appearance of species was not always seen as a positive trend. Many species perceived as increasing were also perceived to be out of place, the 'wrong' species in the 'wrong' place, or as simply too abundant. (Fischer, et al., 2009)*

Interconnectedness and natural balance emerge from these studies as two strong components of what we might call an everyday concept of biodiversity.

These findings were strongly reinforced by our own qualitative workshops. Participants across workshops articulated a clear picture in which different living things have different roles to play in the functioning of an interconnected system:

Everything has its part, hasn't it? The bees and from the smallest insects, they do their part and it works its way up, they all have a part to play, their contributions. [f, B1]

Every species has a job, whether we recognise it or not, they do something, whether we see what it does or know what it does, they are here for a reason. Just because we don't know or it doesn't interfere with our lives, does that mean we get rid of them? Everything on earth has its own little job, it is here to do something. [f, C2]

The midges were there and the birds ate the midges and the fish ate the midges and the kingfishers ate the fish and the rats ate the fish. That's why they were all there really, isn't it? One thing feeds off another and off another and off another. [m, C3]

> *m1:   All living things are everywhere and everything has to live with everything else. Because it's all interlinked.*
> *m2:   Nature's spent a long time getting the balance, or trying to get the balance, and you have things at the bottom of the chain and you have things at the top of the chain.*
> *m1:   It's all there for a reason. [A1]*

> *f1:   They [living things] are there to help natural places to flourish…*
> *f2:   They grow naturally…*
> *f1:   Worms between the earth turn the soil, bees pollinate flowers, that is all part of the nature process. [B3]*

Participants were also clear that this idea of everything having a function extended to living things which they personally disliked:

I grow vegetables and I hate it when the slugs come round and start eating my flowers and my vegetables, but there again, it's all part of the food chain again. [f, A1]

Even the caterpillars that eat your vegetables, they're actually food for something else. [m, Z]

I think every single one of them [living things] is a positive. They are meant to be there. They were there before us and they will be there after us and every single animal has its role – with the exception of a mosquito maybe! [m, B3]

Because of the interconnectedness of living things in a system, chain or cycle, there was also a recognition of the likelihood of knock-on consequences if any particular species was removed from the picture – with bees being the most common example offered (see §3.6.3 for further discussion of bees and the possibility of knock-on consequences for *humans* as well):

It's like everything living together, everything depends on everyone, there is nothing that is more important, as such, to keep everything running smoothly. Anything that breaks that sort of link in the chain would ruin the cycle and other things would be upset by it. Say if bees were taken out from nature, it would have an effect on everything else and that would have a recurring effect on us so you need to take care of every little thing, however big or small it is, to keep that harmony in nature. [m, C2]

> *m1:   All these things are important, you know. We need them all.*
> *m2:   It's a system as well, isn't it. It's a complete system. No matter what we're doing at the moment, the system still exists. For example, somebody said bees – you know, people are hand-pollinating plants now in places like the US and China, where we're already… that's not a good thing, you know. If you actually look at what happens if you destroy the bees completely, you've got a serious*

> *problem, so that is still a complete cycle. And we need to maintain that.*
>
> f: *You need a cycle, yeah. The cycle of life. [A2]*

> *Interfere at your peril, you know. When humans interfere, you're never quite sure of what the results of your interference will be. They can be things you don't expect. [f, Y]*

The ingredients are in place here for an everyday concept of biodiversity, based on ideas of differing jobs, interconnectedness, knock-on consequences and natural balance.

> *None of [these living things] can be defined as negative or positive, they are a part of what it is. Lack of them is negative. Too many of them, of one type, can be negative. [m, B2]*

> *The way that nature works tends to be, in my mind, is living together and working together, but they still have a uniqueness that allows them to work together. Because if there was too much similarity, it wouldn't work. It's like opposites attracting kind of thing. [m, A1]*

> *[Biodiversity is] the idea that there are different kingdoms of life, and within those, different creatures, and in any given environment, you would get small habitats, which butt up against one another, and the overall thing manages to be interdependent, so things are reliant on other things. [f, Y]*

3.2.2   *Competing stories about nature*

Unfortunately, difficulties arise if we try to use this everyday concept of biodiversity to frame biodiversity issues in an engaging way. The reasons for these difficulties are somewhat complicated, and understanding them requires us to take a step back and consider how people understand not just living things in nature, but the broader concept of nature itself.

Across our workshops, two distinct 'everday stories' about nature emerged, which we summarise as "Nature finds a way" and "Nature can't keep up". We set out these two stories about nature separately in §3.3 and §3.4, before returning to consider how a framing of biodiversity issues can work with them in §3.5.

We should stress at the outset that these are NOT proposed framings of biodiversity issues, but the context in which such a framing needs to be developed. These are stories that already out there, circulating in our culture and shaping the way that people make sense of living things in nature. A successful framing of biodiversity needs to resonate *with* them while also navigating *between them*.

We should also stress that we have no evidence to suggest that the two stories correspond to two different mindsets or types of person. Often in qualitative research one is looking for evidence of differences between people in how they experience or make sense of key issues: the implication usually being that different approaches may be required for different audiences. One of the striking features of this research, by contrast, was the prevalence of such differences *within* individuals' ways of thinking, sometimes explicitly recognised by those individuals themselves:

> *You would think I would say that wouldn't you, yeah. That is what I mean. You talk about one thing ten minutes ago and then you bring something else into it and it is like chalk and cheese, you've got to think again about it. [m, C3]*

> *You just go round in circles. Whatever the arguments are, you think you've got the answer, but then something else will come in and take your feet from under you*

because there's always another answer. We have gone round in a sort of a circle. [m, A1]

As they circulate in our culture, these two stories about nature also bump together in people's heads. It may be the case that different people are more inclined to one story or the other, but a different methodology would be required to explore this possibility. (Interestingly, there was no discernible difference in this respect between our workshops with Tiers 1 and with Tiers 3 and 4).

Alongside these two stories about nature, we also identified two 'everyday stories' about *humanity* which are of relevance to framing biodiversity issues, and which we summarise as "Humanity finds a way" and "Humanity can't keep up". These stories are discussed in §3.6 and §3.7. Once again, these stories are NOT proposed as framings of biodiversity issues: indeed, the first needs to be challenged by such a framing. In contrast to the stories of nature, however, it was clear that these stories about humanity were not universally subscribed to.

3.3   "Nature finds a way"

3.3.1   *Adaptation and recovery*

The first story about nature turns on the remarkable capacity of natural systems to regenerate and adapt after being damaged in some way.

> f1:   *It's like the life cycle isn't it.*
> f2:   *I just agree, I think nature has its own way of finding its way through, or maybe I just hope it has its own way of finding its way through. [C3]*

Participants in our workshops had plenty of examples to offer of this capacity to regenerate and adapt, many of them drawn from things they had seen on television or in the media. There was in their descriptions a sense of genuine awe and wonder at the power of nature:

> f: *It's a cycle, isn't it? It's, like, we went through the Ice Age, the Iron Age, the Stone Age. All those ages, we've gone through them and we've recovered. Whether it's for the better or for the worse, I don't know, but we've developed on, and we're here today with our little wildlife.*
> m: *It's like that Wonders of Life programme last night, isn't it? It just seems to recreate itself and develop […] No matter what… like comets hitting the earth, whatever, it doesn't matter, it seems to, the world seems to sort itself out and… just creating and moving on all the time [A3]*

> *Like when the world had the big thing that happened that reduced species by 70%, they still all came back eventually. [m, B1]*

> *I do think that it [nature] does adapt. If you think of all the disasters that happen, it's awful, but it sorts itself out, it comes back, not exactly as it was but I think things change and that is how evolution goes and sometimes things happen for a reason as things need to be changed. I am not saying it is good at the time and it causes destruction at the time but I do think nature always finds its way and I am a true believer in that….Volcanoes and earthquakes, tsunamis and things like that, it all happens for a reason and a lot of it isn't man made, a lot of it is nature's way of changing it. [f, B3]*

> *I don't know how they [animals] evolve, but thinking about the program I was watching, it [a volcano crater] had gone from nothing thousands of years ago and now these scientists were in there trying to see what life was there and he actually went to a different volcano where there was just cactus growing, there was like nothing there! And then he found, somewhere under some rotten wood, a beetle type thing. How it came to be there they didn't actually say, but it was, like, interesting that they had survived in, like, nothing. Next to nothing. It was just interesting. I suppose they change, animals change don't they and different animals evolve. I don't know how. [f, C3]*

> f: *There was a piece in the Sunday Times magazine this week […] it's about visiting Chernobyl, and how it's all been, you know, laid waste and so on. And what's happened to it in the meantime, that nature's taken over again and they've got wildlife that's naturally…*
> m   *And the wolves are better and stronger, yes, and evolved through it. Yes, that's right.*
> f: *That's right, yes. Despite what humans have done. [A3]*

Other examples of nature's ability to recover involved rather less dramatic interventions by human beings, such as agriculture or construction.

> *We cultivate, but even so the weeds will grow up, it [nature] always has its little say somewhere and that is the spark of life. […] However much man does cultivate it or make it into fields, nature always sneaks back in behind your back, and will take over. [m, B1]*

> *It [nature] does seem to sort itself out in the end, you know, it does recover well, regardless of what human beings do to this planet. Half the time human beings seem to, we seem to work in one area, but then we move to another part of the world. And it seems like after time, it does recover and sort itself out and redevelop again. [m, A3]*

> *Nature will recover itself. Nature will find a way, somehow, quite often in the ways that you do want, on occasion in ways that you don't want. It's a bit like when they had the big debate on the bypass. What looked like a horrendous cut through – which it did look like – now you drive through it and there's natural banks where you've got kestrels flying over. Nature has had time to recover itself. [m, A1]*

In some cases, discussion of nature's tendency to 'sneak back in' led to *Ozymandias*-like reflection on the vanity and impermanence of human endeavour:

> *We think we are better than anything else on the planet. Ah! Only for the period of time while we live here. And nature will take us back. It doesn't matter how bad we are, how much concrete we put over the planet, how much nuclear power we have, how many holes we dig in the ground to get coal out, nature will always be there. It was there before the dinosaurs, it will be there after, and it was there before us and it will be there after us. We may only have a limited span. We are not destined to live forever – mankind, never mind individuals. [m, B1]*

3.3.2   *Nature as a dynamic equilibrium*

Given nature's ability to adapt, recover and regenerate, is it actually possible for human beings to do permanent damage to it? This was a live (and unresolved) debate in our workshops, and in due course we shall consider the other side of the argument. For now, we will stick with the

first story about nature, "Nature finds a way" – the implications of which are quite clear: provided you take a long enough view on things, damage is *not* permanent.

> *I don't think it [nature] is really damaged. I personally don't think it is permanent. I was thinking about Australia and the bush fires and things like that. You think it is destroyed forever but they do tend to grow back again, so I think it [nature] will continue, I don't think it will be wiped out totally. [f, B3]*

> *f1:   I think some damage we are doing, can be, is possibly permanent.*
> *f2:   Yeah, I think in your situation [to m1, who had talked about a dual carriageway built through a rural area], that's permanent isn't it?*
> *m1:   Having said that, if it were left alone now. […] Eventually it would revert back and become overgrown*
> *f1:   Yes, the concrete would crack.*
> *m1:   Eventually. [C3]*

The same principle was applied to the concept of natural balance – which, it will be recalled, was part of the everyday concept of biodiversity discussed in §3.2.1.

> *We're going to have a glut of slugs this summer because of all the rain. But I reckon we're going to have a huge amount of toads and frogs that are then going to eat them. And hedgehogs. Nature will balance it out. It may not be this year, it may be four or five years down the line. [m, A1]*

> *It won't become unbalanced because it will look after itself. If the herd gets too big, then you will get a thriving carnivore population and they will keep those down. That balance happens. [m, A2]*

> *mod: Is it worrying when you haven't seen a robin for a while? Or blackberries?*
> *f: I think you just assume that they are going to come, you just assume that they are gonna be there because 'I aint put them there so they're gonna be there', do you know what I mean? I don't put them there originally so they're bound to come one day. [C3]*

One way to think about what is going on here is to recognise that this first story about nature is essentially the story of a *dynamic equilibrium*. 'Balance' is not a precarious state which is easily lost, but an active verb which describes nature's own processes. Nature balances itself – and that is how it recovers from damage.

As is apparent from some of the quotations above, there was a widespread recognition that recovery may involve finding a new equilibrium, rather different from the one which obtained before. To put the point technically, *phase changes* are possible. After a serious catastrophe such as a comet hitting, the new equilibrium may be radically different, with entire species missing – such as the dinosaurs, for instance, or us. But nature, the underlying process, continues.

3.3.3   *Species loss and natural recovery: an absence of risk*

In §3.2.1 we proposed an everyday concept of biodiversity which recognised that different species have different jobs to play in the system, and that the loss of a species is therefore likely to have knock-on effects. However, according to the first story about nature, that same system is able to adapt to and recover from such losses.

> *m1:   Nature adapts. If a link in the chain is broken, nature is very good at creating another link around it.*

> f1:   *Nature must be balanced.*
> f2:   *I think there is within nature an intelligence that we don't know about. […]*
> m2:   *The world goes on. If something dies out, life keeps going doesn't it? It doesn't suddenly break the chain, life will carry on. [A1]*

For one thing, many participants questioned the idea that any species is irreplaceable – objecting, for instance, to the use of the word 'unique' in a prompt statement referring to the contributions made by different living things to a natural place.

> *Talking about different types of trees, for example, there is no reason why an oak tree being in a place contributes to the overall environment where like a sycamore tree wouldn't. So it isn't that the species overall is so important, just the fact that maybe life is there doing what it does. [m, B2]*

> *When you work in a team, when one person is away it doesn't stop, something's still got to be done, you've still got to do your work and I am using it on that sort of principle, that if problems arise or things are broken, other things take over and the cycle still goes on, it will just get picked up as something along the line. [m, C1]*

More importantly, however, participants were clear that nature could recover from species loss because this is how scientists tell us nature works.

> *The world hasn't died because the dodo bird is no more. The world hasn't died because the dinosaurs are no more. […] Things will continue to die off. There's things dying off at this minute that we're not even aware of. But at the same time things are coming into being. So it's a continual process. [f, A1]*

> *Just because of the process of life, links [in the chain] are broken all the time. And again it comes down to adaptation. We make choices; they make choices; survival of the fittest, the weakest dies off and the strongest flourish. There is always space for adaptation in that chain. [f, B2]*

> f1:   *Looking at Darwin's theory of evolution and natural selection that, without any intervention at all, if you looked at a habitat that was completely unspoiled over time there would still be a process of a dominant species and a dog eat dog environment where the weaker one is killed off. […] Look at places we can't get to hundreds of miles under the ocean floor, we can't get there but still natural selection will happen. […] It might become more unbalanced but you can't really help that. Something might become more dominant than something else, so there is more of that species…*
> m1:   *But that is still nature, that is how it is intended to be.*
> f1:   *Yes, we would never have progressed from dinosaurs otherwise. [C2]*

Whatever the knock-on consequences in the short term, species loss does not in fact destroy the balance of nature, not only because nature is a process that balances out such losses, but also because the losses themselves are part of that process. And even when they are not, but are caused by human beings, nature will balance them out in the same way.

Given which, while it is clearly the case that we can cause extinctions and that these extinctions can have knock-on consequences, the idea that we can cause the *overall variety* of life in nature to decline appeared to many participants to run contrary to everything they had been taught. Consider the following reaction to a prompt statement which included the idea that the natural variation in living things can be 'reduced or lost':

> *I don't believe that we can reduce the variation of nature. […] Because everything we've learned about nature, be it at school or elsewhere, is telling us nature is all about diversity and variation and DNA changing and you getting changes in the actual animal via small changes in the DNA, regardless of what is happening in the outer world as it were. So I just don't believe that we can stop the variation… well, we can't change nature. […] It [the prompt statement] tells us we are changing nature's nature and I don't believe we can. [m, B2]*

Put baldly, the combination of the everyday concept of biodiversity sketched out in §3.2.1 and the first story about nature, that nature will find a way, completely undermines the possibility of risk perception (see §2.1.2) in relation to biodiversity. One of the key ingredients of engagement is, at a stroke, removed.

That, at least, is the situation with regard to the first story about nature. In §3.4, we will review a very different story about human impacts on nature.

3.3.4   *Awe and wonder*

While the "Nature finds a way" story may serve to undermine the possibility of risk perception, there are good reasons to believe it could supply another crucial ingredient of engagement – the thing that people actually value.

Our suggestion here builds on the proposals for a 'biodiversity brand' made by Futerra (2010). They draw attention to the widespread sense of "awe and wonder" people feel in respect of nature, arguing that: "While most people might not think nature has intrinsic value, we do nonetheless value how it makes us feel." It is this "love" of nature which Futerra argue needs to be placed at the heart of a biodiversity brand (at least for the purposes of public engagement).

But what *exactly* is it that we feel this awe and wonder for? Drawing on both the evidence and the experience of our qualitative workshops, we would argue that a very strong candidate is the very process of growth, adaptation and recovery which is central to the "Nature finds a way" story. Not living things themselves, but the remarkable, ongoing process of which they are both products and agents.

The step from awareness of this process at work to the existence of a divine creator may not be an automatic one for many people in the UK these days; but the spirituality of the experience remains and was demonstrably on show in our workshops.

> *It sounds really silly, but it's so simple, you put a seed in the ground and it grows, and that is amazing, I think that's brilliant. Yes, that doesn't get boring for me and, you know, it's… that's fantastic, yes. [f, Z]*

Of relevance here are our own experiences as qualitative researchers conducting the workshops. Members of our team have conducted research on a wide range of highly emotive topics (including death and long-term illness) as well as a range of other environmental issues (including CO_2 reduction). While it is hard to provide specific evidence for this claim in the form of quotations, we were deeply impressed by both the emotional engagement and philsophical sophistication of workshop discussions: "awe and wonder" are appropriate words to describe the tones in which people described the processes of nature and the mood of their discussions. In making this observation, it should also be stressed that participants were drawn from tiers which are LESS engaged with biodiversity issues (though we did deliberately exclude the 17% in Tier 2 who claim to be unconcerned).

Building on Futerra's argument, we would therefore recommend that a framing of biodiversity issues needs to give a central position to the process of growth, adaptation and recovery which is central to the "Nature finds a way" story. Living things in all their diversity still have a vital role to play in this framing, but positioned as the products and agents of this process.

3.3.5   *Invasive species: a case study of the "Nature finds a way" story*

In one of the exercises in our workshops, participants were invited to think about things which could have a negative or positive impact on a natural place. Overwhelmingly, the items identified on each side were examples of human agency, despite great care on our part not to prompt this in any way. Only a few participants included invasive species on the negative side.

> *I don't think it's particularly important, but invasive species as wel […] due to people bringing in pets and then deciding they can't keep them. Releasing them, and they've just released a natural predator into the eco-system that upsets it. [m, A3]*

Even when prompted to consider whether living things (other than humans) might have positive or negative impacts on a natural place, participants in workshops where invasive species had not already been raised tended not to mention them on the negative side. And when the topic was introduced by the moderator, there was a marked tendency to invoke the 'nature finds a way' story.

> *m1:   I struggle to see how anything natural can damage a natural place. Because over time, evolution, everything is balanced out isn't it, certain things are there for certain things to feed on, and there's a big food chain and I think it is only when there's human interaction that everything goes out of kilter…unless it's done properly.*
> *m2:   You could say rabbits are something that could be classed as something that could spoil a natural place, if they got overpopulated and were eating the young saplings and trees, things and stuff like that that they do.*
> *m1   But there again… that is all part of natural lifestyle; it's not something that shouldn't be there. If the rabbits are there, then they're there. But if there are too many of them then foxes will come and other animals that live off them and…*
> *m2:   And it [rabbit population] will be levelled off.*
> *m1:   Yes, they will try to level it off. [C3]*
>
> *I am not sure whether things should be actually placed where they shouldn't be, where they haven't introduced themselves naturally. But I also know that animals and nature has a great way of adaptation. […] And survival of the fittest comes up again – so if you can't deal with it, something else thrives and something else lives off of that. [f, B2]*

Some participants went on to point out that nature not only finds a way to recover from such introductions, but actually makes its own. Part of the point of a dynamic equilibrium is precisely the fact that it is dynamic – constantly changing while, in another way, staying the same:

> *I was just thinking that nature is based on survival of the fittest and, you know, whether we introduce black squirrels into the country and they have a negative impact, or red squirrels for example, you know nature does that as well. I think we forget we're not the only ones that move plant species around. [m, B2]*

> *Animals have migrated, haven't they, naturally. It's just that we make that much more easily available. So that's why I thought: who decides where they really belong, and have they got themselves there? [m, A2]*

Not that this was seen as grounds for complacency about invasive species. On the contrary, participants were very clear that the human act of introducing a new species into a natural place could have a profoundly negative impact. What made little sense to them was to describe the species itself as negative:

> *I can't help but think that if we didn't exist, as in if we hadn't evolved the one step to where we are now, it would all be in harmony anyway. [...] Like you wouldn't have the grey squirrels you've got to cull because they've wiped out the red. Because we brought them, didn't we, we brought them from another continent. So it's us, it's us that has messed it all up and now we've got to put it right. [...] I don't think nature would be doing the things that it's accused of doing if it wasn't for us. [m, A2]*

Nature, including living things, exists beyond concepts like 'having a negative impact'. It just is. Only when humans enter on the scene does it make sense to start talking about the negative or the positive – or more obviously moral categories like fault and responsibility. And human activity is at the heart of the second story about nature, to which we now turn.

3.4   "Nature can't keep up"

3.4.1   *Ubiquitous humans*

The second story about nature turns on the inescapable impact that human beings have on nature.

In and of themselves, the processes of nature are entirely independent of human beings:

> *When you see the little ants going along, silly as it sounds, they are doing it themselves, nobody is making them do it, by clockwise or computer or otherwise. [f, B1]*

But when asked what made the natural places they had been discussing *natural*, while a few participants suggested that this should mean that places are 'untouched' or 'untainted', most were quick to point out that, in practice, this is rarely if ever the case. Humans have had an impact of some kind on natural places everywhere. What makes these place natural – in contrast to human-dominated environments like cities – is not the complete absence of human impact, but the fact that the processes of nature are still (to a greater or lesser extent) *allowed* to happen.

> *[Commenting on parks] They are not natural, they are man made, like farms and everything, they are not as nature was created. But they are… nature is still providing its life's expectancy, it's growing and stuff. It is nature at work and, of course they are man controlled. [...] Primitive forests are very rare, but yeah okay, there is still stuff that nature is showing up – it is man-controlled but not man-made. [m, B1]*

> *Even in places where they're forested, or evenly planted, there's still the opportunity there for wildlife and for other plants to grow. I suppose the difference is that it's not an environment which is dominated by man-made non-natural things, like houses in rows and streets, and cars and stuff like that. [m, A3]*

> *Things come there of their own volition. [...] They just pitch up if they feel like it. So there's something natural about that, isn't there? [f, Y]*

> *My place is not natural in the sense that the surrounding fields are obviously farmed, so that's not natural. But it's natural as you're walking down the road and you see something dead, it's not been cleared up, it's rotting, basically. And it's uninterfered with. Even if there's a road there, the lane's been put there, no-one is there interfering with it. [f, A1]*

Some natural places, in fact, are examples of nature having reclaimed thoroughly non-natural human creations.

> *Before there was the rubbish tip [...] they've filled it all in and it's creating wildlife again. So, you've got new plants growing in, you know, you've got the butterflies coming back, you've got the dragonflies and that sort of thing just, you know, being created again since they filled this old refuse tip in. [m, A3]*

> *They've built all those concrete islands and stuff [in Dubai], which is now a great nature reserve. The fish are loving it because stuff is hanging onto it. [m, B1]*

Examples of natural places such as these are, of course, also examples of the "Nature finds a way" story – nature recovering and adapting. For current purposes, however, our focus is squarely on the human intervention to which nature is adapting.

It should be noted that, despite the markedly philosophical nature of much discussion in the workshops and the range of issues addressed, the question of whether humans themselves are 'natural' was barely touched on. There was, however, a general acceptance that human intervention in nature is *necessary*, and one participant did go so far as to suggest that in some way this is humans doing 'what comes naturally' to us:

> *We need to feed us, we're a growing population, we need to feed us, so, we're going to have some kind of repercussions. [f, A3]*

> *Since man and woman have cultivated their environment, the word 'natural' takes on a completely different meaning. But that's been necessary for man's... humankind's wellbeing, as well. We have to eat, we have to have land where we grow things. We choose to farm animals, so we have to have land for them, as well. [f, Y]*

> *I still think that it's nature's way and, you know, hunting has always gone on. Animals hunt each other, if we weren't hunting them other animals would be hunting them... I just think it's...yes, I can see the point that we are taking the gas and the oil and maybe that is causing problems but we are all nature aren't we. And we are doing what comes natural to us. We are evolving. [f, B3]*

There was also wide agreement that this necessary human intervention in nature does not have to be negative. On the contrary, much intervention is positive.

> *Not all interference has to be bad, does it? Some interference is good. [f, A1]*

Figure 7 summarises the negative and positive impacts identified by participants (including the very few non-human impacts mentioned). Please note that the obvious domestic focus of these lists almost certainly reflects the fact that participants had previously discussed natural places they knew and visited themselves, all of which were in the UK: if we had prompted participants to think more internationally, the list may well have looked different.

Figure 7: Negative and positive impacts on natural places

Negative impacts	Positive impacts
Poor management/maintenance	Good management/maintenance/stewardship
Bad farming practices	Conscientious farmers
Bad business practices	Concerned local communities
Thoughtless and ignorance in visitors	Respect and common sense in visitors
Greed	Education
Pollution, litter, rubbish	Conservation and renovation
Vandalism	Time to recover and regenerate
Overpopulation	Use, so that a place is valued and protected
Too many people, overuse, traffic	Limits/controls on access or behaviour
Commercialisation, incl. shops and cafes	Investment, incl. appropriate amenities
Buildings, housing, infrastructure	
Natural disasters, weather, flooding, erosion	
Invasive species, diseases	

3.4.2   *Getting the balance right*

The possibility that our interventions in nature can be positive is important, as it lies behind a clearly articulated ideal of proportionate use that balances our needs against the needs of nature.

> *We have to live ourselves and if we live with nature – good. It benefits both nature and ourselves. So it provides a mutual respect for each other. [m, B1]*

> f1: *It is a vicious circle. You do have to damage some of the environment to progress in your life don't you, there are always going to be schools that are needed and things like that, so there is only so much…*
> f2: *But it is about being able to say stop now because we are taking too much.*
> m1: *If you chop down a tree to make a stool, if you plant three trees are you really damaging nature as the tree would only last so long anyway so as long as you are replenishing it for future generations…*
> f1: *So long as we know as a group of people if that is needed, but not to do it just because we can. [C2]*

> *It's a bit like cutting out dead wood and using it for firewood in a forest. You're going in there, you're managing it, but you're actually taking away and using what you're destroying. [m, A1]*

For a few participants, this idea of finding a balance of needs was linked to the idea of finding our own place in nature, our own role alongside all the other species:

> *We are a living thing, they [animals, plants, bacteria] are a living thing and we all live together. […] We all make the world beautiful together. [f, B3]*

It is more really like a cohesive thought of how nature is and then how we are. And how we have moved away from it, after all we are all part of this living earth, this process, and we are moving so far away from that. And by doing so we are also destroying habitats, natural habitats and so… I was thinking more along the lines of the natural, apart from ourselves, the natural world lives together and there is a cohesiveness to it and we are separating ourselves from it. […] I walked to here and I saw wood everywhere, and thinking about managing natural places, it made me think of – can we really live without taking from nature? Of course we can't. Every living creature takes in some way. At the same time maybe living in an environment where we use natural resources more respectfully I guess. [m, B2]

One important aspect of this kind of accommodation with nature, however it is framed, is allowing the natural regenerative processes of nature to work.

I think we have to view it, whether we like it or not, the planet is a resource. But it needs to be very, very carefully managed so that it can renew and look after itself. [m, B1]

For some participants, moreover, this meant recognising that those natural processes of regeneration might not always be up to the task of repairing the damage that we cause. Sometimes nature needs help to help itself:

Sometimes nature needs help, you shouldn't be taking things just for the sake of it but sometimes nature just needs a help…. If a pond is polluted you need to help it don't you, you can't just leave it alone you have got to help it along. […] Sometimes it can't help itself, sometimes we are killing it… different things…but it doesn't always look after itself, that is life. [C2, m]

I've been watching a lot on, I don't know, the survival of the tiger and whatever else, and my snap from that was, really, we have gone way too far, and we are now killing off what else lives on the planet. […] It's not just about let's leave nature alone, it's about let's behave, because we've almost… well, we have gone too far I think. We're naturally interfering with it on a daily basis anyway, so now we can't just say we can leave it alone, now we've got to be proactive, we've got to get a grip of it. [m, A2]

3.4.3   *Too much, too fast: the source of risk*

Balancing human needs against the needs of nature is an ideal to which many of our participants subscribed. But few felt it was an ideal humans are currently living up to. The fear expressed by many was that we are now taking too much, too fast – and that nature simply cannot keep up.

There is a certain part of me that thinks, well, nature will always find a way of renewing itself, if that is the process that is going to happen. But obviously there is a point, there is a limit to what you can take before it changes what it used to be forever and maybe even disappears. [m, B2]

We have opened the Pandora's box of effects now, so we have to intervene. [f, C2]

Various factors were cited to explain this phenomenon, such as overpopulation, the ever-increasing greed and consumerism of our society, and the speed at which that society is itself changing. Running through all these explanations, however, was a recurrent theme: that we are not allowing time and space for the natural processes of recovery described by the "Nature finds a way" story to operate.

> *f1:*   *If you are taking things away from it, it's going take a long time for nature to take care of itself and build back up.*
> *m1:*   *It took years to be like it is, only to be spoilt in months, years or whatever. It will take years to recover.*
> *m2:*   *Nature can't keep up with us. [C1]*
>
> *f1:*   *Things have always died out, the dinosaurs died out and then there was an Ice Age, I think, if I have got that right, and nature has always sorted itself out.*
> *m1:*   *Yes but it has taken millions of years and that is a very long wait. Man can't wait that time. The concrete jungle that man has been rearing over the last couple of hundred years is making it more difficult for nature to exist…*
> *m2:*   *It's the pace at which we're moving… [B3]*
>
> *m1:*   *There are certain things happening in the world now that are going to take 50 to 100 years to replace. What I said earlier on regarding the rainforests and such, chopping trees down that have took 50, 60 plus years to grow. If nothing is built there or nothing is put in its place, they will regrow again.*
> *m2:*   *But again for me, human demand means that it won't be left alone, will it? We're just going to take more. Or the trend is that we will just take more and more. But it would do [regrow], wouldn't it, if it were left alone. But world population is increasing, so…   [C3]*
>
> *Yes, nature probably could find a way of getting around all the damage we've done, like Chernobyl. However, if we continue to do things, like, if we continue to work in Chernobyl as an irradiated zone, and mankind's presence had stayed there, would nature have made it back? We seem to be doing more damage than nature can come back from, because we're constantly there. If you took us off this planet, nature probably could come back from it. [m, A3]*

As a result, the "Nature can't keep up" story provides a basis for the risk perception element of engagement which, as we argued in §3.3.3, is undermined by the combination of the everyday concept of biodiversity and the "Nature finds a way" story. The sources of that risk lie in our taking too much, too fast, and so not allowing time and space for the natural process of recovery described in the "Nature finds a way" story to operate.

For complete clarity, we are NOT here suggesting this means that we need some how to eliminate or neutralise the "Nature finds a way" story so that the "Nature can't keep up" story can triumph. There are a number of problems with this idea, not least the facts that i) it is not clear how one would set about eliminating or neutralising a story with such a powerful cultural presence, ii) so far as the authors understand these matters, the "Nature finds a way" story is substantially true and iii) we have already argued in §3.3.4 that the "Nature find a way story" has a pivotal role to play in engagement. In §3.5 we shall argue that what is needed is an effective *synthesis* of these two powerful stories. The point to be made here is that, in that synthesis, it is the "Nature can't keep up" story which underpins the critical element of risk perception.

The high proportion of the population in Tier 1 of the tier definition (see §1.2.1) does however suggest that there is plenty of work still to be done to raise awareness of the scale of the risks associated with our taking too much, too fast. In our own workshops with members of Tier 1, we sought reaction (towards the end of the workshops) to a prompt statement that :

> human activities are causing the extinction of plants and animals at some hundreds or thousands of times faster than what the natural rate would have been. Globally, it is believed that 1 out of 8 bird species are at risk of

extinction, 1 out of 4 mammal species, 1 out of 4 conifers, and 1 out of 3 amphibians.

For clarity, it should be noted that this was a prompt statement as part of an entire workshop design, and is most definitely not suggested as a freestanding message to be used for actual communication purposes – a point we return to in the next section. Some of the reactions in the research context, however, confirmed the possible role for this kind of information within an overall framing of biodiversity issues.

> *I am just amazed. I didn't know anything that bad had hit. I am stumped for words, shocked. You hear about, you watch the birds coming out of the sea covered in oil and you think about it on that type of scale, but not that scale. I am amazed, it is just amazing. I can't believe it. I believe it as a statement but… [m, B3]*

> *If that is true, that is really worrying, if that is true. I watch a lot of news and things and you are aware that we are damaging certain things, but I didn't think… if that is true, I didn't realise things were that bad. [m, C3]*

> *Well, gosh, that's quite shocking facts really, isn't it. If you've… things are being, you know, dying before they're being… quicker than what they've actually been reproduced. It's my, you know, that's my personal opinion. The thought of it really. Quite shocking facts, I mean, you know, unless you go over it again. Just bits of it I thought were, well, it is quite bad really, in fact, if it's true. [m A3]*

3.4.4   *Villainy and imbalance: framing risk in a constructive way*

Of course, in and of themselves statistics do not settle a point. We have selectively presented above one particular kind of reaction to the prompt statement. Other reactions questioned the veracity of the claim (possibly another manifestation of shock, though a much less useful one); and the concept of a 'natural rate' of extinction was particularly problematic for some participants.

> *I have to question that's someone's opinion that it [species loss] is changing faster than it should. Why have they come to that conclusion? Who sets the pace? Maybe it needs to go at that rate, maybe that is modern evolution. [f, B3]*

There is a growing recognition of the dangers of negative messaging in the environmental sphere. As noted in §2.1.2, Futerra (2010) raise a number of serious questions about the use of 'loss' messages, some of which were echoed by our participants.

> *I think 'protection', but in a fearless kind of way because I don't want to be really scared. I know you [other participant] just said that it is going in a really scary way but really I am excited about the future and what it holds for me so I don't want to fear what is coming my way. And that might be selfish because my kids might, or my grandchildren might suffer in a way that I am not really suffering at the moment, but I want to enjoy. [f, B2]*

However, one can accept Futerra's counsel against messages focused entirely on loss while retaining a role for risk and loss somewhere in the overall framing of biodiversity issues. It is not the mere existence of a threat that makes a message negative, we would suggest but the way in which the presentation of that threat positions the audience. In particular, as recommended in Chapter 2, it is essential that the overall framing of an issue gives us a *positive* role as individuals in protecting or nurturing the valued thing that is at risk. This will not be the case if:

- The risk is presented in a way that makes it impossible to do anything about it (e.g. messages which focus on past losses that have already happened and cannot now be undone)

- The risk is presented in a way that makes us the villains (e.g. 'hairshirt' messages which focus exclusively on the need to stop doing bad things, without identifying any positive actions we can take)

The prompt statement used in our workshop – that "human activities are causing the extinction of plants and animals" – is an example of the second kind of issue. It presents humans as the villains of the piece, focusing exclusively on the negative consequences of our actions. Probably as a result of this, the statement prompted a number of what might be seen as 'defensive' reactions, the general theme of which was "Aren't we already tackling this?":

> *Where does the clear evidence come from about human activity? I mean, I thought human societies, surely, were looking at ways we can improve things without destroying environments. I thought, I would think people were working to do that now because we have much more awareness of what we are doing to the world that people are trying their hardest to look at ways to still improve things but without damaging the world. [f, C3]*

> *My opinion is that human nature, people, businesses, companies are more aware of this fact and they're doing a lot more to help nature help regenerate. I know [Company], for one, they have a fund for regeneration of the planet, the trees that they might chop down or, you know, the roadside pollution and things like that. They put back into that. [f, A3]*

Others disputed this view, tending instead to what might be seen as a 'defeatist' reaction:

> *I was just thinking, you know, we could sit here in 20 years time, and you would read that statement out, and instead of one in three, it would be one in two. Instead of one in five, it would be one in three. And we'll still be sat here debating it. […] At what point do we take notice? […] we'll read them and we'll forget about them. We'll read the cartoon on the next page and it'll be gone. [f, A3]*

Neither of these is a useful reaction from an engagement point of view; and both point towards the need to take great care in framing risk.

In particular, we should remember that the "Nature can't keep up story" does not in fact focus exclusively on the negative consequences of human activity. Instead, there is a clear recognition that human interventions in nature may be negative or positive. It is not the case that humans are *villains*, pure and simple, having only a negative impact: rather, the source of the risk lies in our having got the *balance* between negative and positive wrong.

Counter-intuitive as it may seem, the framing of the risk may therefore be strengthened, not weakened, by acknowledging all the good things that human beings are doing and can do – albeit while emphasising that we still have not got the balance right.

What applies to humanity as a species also applies at the individual level. Many individuals are already doing positive things for biodiversity – although a majority of them may not know it, and may be doing those things for entirely different reasons. Validating the positive impact that individuals are already having through their actions may be an important part of a framing of biodiversity issues, not just to make people feel good about themselves but also, perhaps paradoxically, to strengthen the message that we have still to get the balance right.

3.4.5   *Access to nature: a case study of the "Nature can't keep up" story*

Much of the discussion in workshops of the need to strike a balance in our use of nature – and avoid taking too much, too fast – centred on appropriate levels of access to nature. Like the lists of positive and negative impacts above, this emphasis may be an artifact of our workshop process, and in particular the anchoring of conversation with discussions of natural places which participants knew and visited; or it may reflect the fact that these kinds of threat to and uses of nature are closer to the everyday experience of our participants (who do not, for example, have much firsthand experience of poor farming yields owing to soil degradation). Whichever is the case, the content of the discussion remains an excellent example of the "Nature can't keep up" story at work, and one which clearly makes sense to people.

On the one hand, participants were clear that humans being have a legitimate desire and need to access natural places – with a few going so far as to suggest that this is the only point of natural places:

> *You'd just never appreciate it, to not be allowed to go there, then there's no point in having it, you may as well build on it. [f, C2]*

Moreover, a number of participants argued that access is itself good for natural places: if people visit the place, then the place is valued, and if it is valued it is less likely to be damaged for other reasons. Charging for access was seen, for this reason, as likely to have a negative impact on a natural place – although there were some who recognised that it might raise necessary funds for investment.

> *We have a positive impact [on a place we visit] by the fact that the place is being used. If a place is not being used then you can say that it is a waste of space and it can be used for something else. [m, B1]*

> *If we put it in a glass box and you're not allowed to go anywhere near it, then you can't get any enjoyment out of it and you would then tend to diminish its value. But by doing it this way, you're being able to get the enjoyment, but you're not causing too much damage to it. There would be some damage on a micro-scale, but you want to preserve what you're going there to see. [f, A1]*

> *I think it tells everyone that there is a need for it, that people want to be there, want to see it. So why destroy it, why get rid of it? You need it there. [f, B3]*

On the other hand, participants recognised that there are downsides to access. At the most basic level, a visitor is almost bound – inadvertently – to do what the respondent quoted above called 'damage on a micro-scale':

> *I don't damage it but then again when you are walking through woods and fields you are, aren't you, treading stuff down. So you are damaging stuff in a way without meaning to. [f, C3]*

This kind of damage can be amplified and exacerbated in two ways. First, if visitors are ignorant or lack respect for nature, then they are more likely to cause damage. Secondly, even the most careful visitors will cause damage if there are too many of them, making the sheer number of visitors another possible threat. Over and above these direct consequences of access, there are also negatives associated with the measures that have to be taken to enable and encourage access – such as building paths and amenities.

The clear aspiration for participants was to find a balance between the positive and negative consequences of access.

> *I think something that forms a balance I find nice and a good place to be. You know, we are here, you can't get away from that. […] A balance between human kind living here and doing the best they can. [m, A2]*

> *Some sites basically should have limitations on where people go and what they do. You can walk through a wood, but you don't have to go through the whole wood maybe. [m, A2]*

There was a general recognition, however, that this balance point will fall in different places for different people, creating the need for different kinds of natural place. In particular, in line with the different types of experience discussed in §2.4.3, there were differences in people's attitudes to and tolerance of the provision of amenities in natural places and the trend towards commercialisation.

> *They've got a shop there now as well. Everything's commercialised. […] If it's such a free place and clear, clean… why has there got to be a shop? [m, A3]*

> *[It's been] commercialised. Changed. Half of me says it's good and half of me says it's a shame because they are driving wildlife away, birds and things like that. But it's great for the kids, it's convenient, you've got the loos so they're not going in the hedges! [f, A2]*

For those involved in looking after local places, striking a balance between these competing human requirements could be as big a challenge as striking a balance between humans and nature.

Participants had plenty of examples of places where, from their point of view, this balance had been struck. But they were also able to identify places where the balance had been lost, and disproportionate human use allowed to damage a natural place.

> m1: *The more you go down the road of how much do we allow humans to use this, and how do we… you know, next we'll have a little fairground ride. So to me it's a lack of focus: you forget it's for nature and you start to focus too much on what humans need from it, and that encroaches into it I think.*
>
> m2: *If it was left alone people would probably still go there, wouldn't they? If there was nothing there.*
>
> f: *Like they put playgrounds, don't they? Children can play in nature, they don't need playgrounds. [A2]*

3.5   Working with both stories about nature

3.5.1   The importance of time

Do the two stories about nature – "Nature finds a way" and "Nature can't keep up" – actually contradict each other in the way their sloganised summaries suggest? Consider for instance the following quotation, which seems to be a clear example of the second story at work:

> *I don't think [nature does adapt]. Because if you alter nature, they put people on those Pacific islands, so you alter nature, and then that dodo bird died out. They put cats onto those New Zealand islands, and that parrot that doesn't fly is getting wiped out. [m, A1]*

Only a few minutes later, however, the *same respondent* offered the following succinct summary of the first story:

> *The world goes on. If something dies out, life keeps going doesn't it? It don't suddenly break the chain, life will carry on. [m, A1]*

What is going on here? In the first quotation, the participant is talking about the loss of particular species – and even nature can't bring back the dodo. In the second quotation, by contrast, he is talking about the processes of nature itself: "life will carry on". The two stories about nature operate at different levels and, crucially, on different timeframes.

> *If we're taking a, sort of, overview of all living things, then the answer is, yes, […] we'll go, and whatever damage we've done, something will go on. But on the other hand, you know, we do damage things to the point where they are no longer recoverable, I mean, we're wiping out species. So, those will go, and once they're gone, they're irrecoverable. But in a much broader perspective […] there will be other ones. [m, A3]*

> *There are certain things that we have destroyed and we can't ever get back, but things happen and, kind of, nature evolves and it moves on. And it can't… things can take its place, not always in quite the same way, but things do tend to take its place and evolve and adapt. But at the same time, things have been destroyed and we can't get it back. [f, A3]*

> *We have to be mindful, we have to try not to do things to cause natural disasters and cause oil to run out and species to die but I do think, I still think, that it [nature] will right itself, as it has done since the beginning, even if it is a complete change of the world. […] I am thinking of it in the now, and then in a very long time. So not in ten or twenty years time, but now, and then beyond me. [f, B3]*

Our hypothesis here is that the everyday concept of biodiversity discussed in §3.2.1, based on ideas of differing jobs, interconnectedness, knock-on consequences and natural balance, automatically prompts reflection at the level of the "Nature finds a way" story – as opposed to, say, examples of human-caused species-loss, which tend to prompt reflection at the level of the "Nature can't keep up" story.

A good example of this hypothesised process at work is provided by the debate in some of our workshops about the words 'permanent damage' in one of the statements we used to prompt discussion. Those who argued that we *can't* cause permanent damage (see §3.3.2) had invariably brought to mind examples of systemic damage to a natural place; whereas those who argued that we *can* cause permanent damage invariably turned out to be thinking of examples of human-caused extinction.

For complete clarity, we are using species loss as an illustrative example here, and not suggesting that biodiversity issues have to be framed in those terms. The more fundamental point is that, however we frame biodiversity issues, we need to be mindful of the timeframes which the concepts we use invoke, and how these may impact on the possibility for risk perception.

In particular, the longer timeframes which tend to be associated with the "Nature finds a way" story tend to dilute or undermine risk perception. What is needed is a synthesis of the two stories – "Nature finds a way" and "Nature can't keep up" – which operates exclusively at the *human* level and on the *human* timeframes of the latter.

> m1   *It [Chalara] does have an implication for people, in that, for example, with Ash, it's been known to be around for about 15 years, and the importation of quite likely diseased Ash has gone on all that time. And saplings have been brought in. So, it's a human thing to determine whether or not one wishes to do*

> *anything about it. […]*
> *m2: Well, you're humanising it. Why are you doing that?*
> *m1: Yes, you are, yes. Yes, absolutely, you are.*
> *m2: If you step back and… what difference, what difference does it make? What difference would it make?*
> *m1: Well in my case, I've got a 150 year old Ash tree in the backyard and, so, it's rather a selfish point of view.*
> *m2: But if you move, or die, it's somebody else's Ash tree. Nothing's permanent.*
> *m1: But if I move, yes, absolutely. Yes, oh yes, absolutely, I absolutely accept that. I'm not sure that that's always an excuse for doing nothing though. [A3]*

For example, we can experience wonder and awe at the capacity of nature always to find a way while at the same time questioning whether we are allowing sufficient time and space for this natural process to work on human timescales. The risk to the thing we value (the process itself) lies in our not allowing it time to operate. Framings which combine the two stories about nature in this way – using concepts such as 'making time for nature', 'creating space for nature', or 'helping nature to help itself' – could help to meet the first two requirements of a positive framing of biodiversity:

Identify something which most people either already value or will readily value	➜	From the "Nature finds a way" story – the process of growth, adaptation and recovery, of which living things are products and agents
Articulate clearly how that something is at risk	➜	From the "Nature can't keep up" story – the imbalance between positive and negative human impacts means the above process does not have time/space to work on human timescales

3.5.2   *Care about concepts and language: balance*

In synthesising the two everyday stories about nature, care will be needed with terms that can cut across the two stories and potentially create confusion. In particular, it will be seen that two quite distinct concepts of 'balance' emerge from the stories:

- The balance of nature. This is something that natural processes themselves guarantee. While we can disturb it, nature will always (in time) find a new balance. 'Balance' here is best seen as a *verb*, something that nature itself continuously does.
- The balance between our needs and nature's needs, between positive and negative impacts. This is something that it is up to us to strike. There is clear evidence that we are currently taking too much, too fast. 'Balance' here is best seen as a precarious *state*, something we have to achieve.

Each of these concepts has a part to play, as we have seen. Problems arise, however, when the two collide – for instance, in the idea that humans have disturbed the balance of nature. Intended as shorthand for the "Nature can't keep up" story, this kind of language will inevitably prompt the reaction that "Nature will find a way".

3.6   "Humanity finds a way"

3.6.1   *Star Trek versus ecosystem services*

In this section, we turn to the first of two stories about humanity which emerged from our workshops. As with the two stories about nature discussed above, these are NOT proposed framings of biodiversity issues, but part of the context in which such a framing needs to be developed. In fact, the first story about humanity – "Humanity finds a way" – is one that a framing of biodiversity issues needs explicitly to *challenge*.

At the heart of this story is the idea that humanity can solve the problems it faces without having to *depend* on nature:

> *Does it matter if nature can't support us? We need to support us. Technology's going to come through for that, so, if it ends up causing other things, it'll sort… those will be sorted once the knock on effects are realised. But we have to be fed, so, it has to happen. [m, A3]*

The story was particularly in evidence in discussions of the consequences of species loss. According to some participants, human ingenuity, flexibility and – most of all – technology mean that such losses will make little difference to us in the long run:

> m: *Man will always replace it with something that will do the job. […]*
> f: *It is like that Quorn and things like that. They are introducing things that taste like meat but aren't meat but are manufactured, aren't they? [C1]*

> *If we lost one type of fish, well that is a species but we still survive on the other fish. [m, B1]*

> m: *If one species died as such maybe we would regret it and feel morally wrong about it, but I don't think it would change our lifestyle in any way shape or form. We would just learn to live with it, adapt and move on, that's what human nature is.*
> f: *It [prompt statement that humans are 'just one part of nature among many'] implies humans are on the same level as other living organisms and animals, but they are so much more advanced and they have such a bigger impact on the world that there isn't anything you can compare it to. If a fish died out that wouldn't have the same impact that we have on it because we drive cars and…we seem so much bigger than any other part of nature. We are not just one part, we are such a bigger part. [C2]*

It is important to note that this story was not universally subsribed to. There were clear differences between participants in this respect, with some drawing attention to the limitations of technology, or its possible negative consequences.

> *I do have a certain hesitation whenever people tell me technology is going to sort anything out, and I wish Star Trek were true, but it isn't. […] Technology has made superficial changes, massive ones, but it's not actually changed people and therefore it's not going to change the outlook of people, which is causing the damage. [m, A3]*

> *The more we rely on technology, the more we take out of the planet. If we got back to the way we used to live, where we didn't pollute everything and kill everything, then we'd probably be happier ourselves as well. [f, A3]*

Nevertheless, the "Humanity finds a way" story provides an important challenge for a framing of biodiversity issues. Of course, everyone hopes that humanity will indeed find a way through

the environmental crisis currently facing us. Moreover, human ingenuity and new technology will undoubtedly play a central role in finding a way forwards. The problem with the "Humanity finds a way" story is that it implies we will be able to do this *without* having to rely on on the provisioning, regulating and supporting services provided by nature. It accepts the idea that, as the participant quoted above puts it, we are on a different level "because we drive cars". It assumes that, while we clearly have an impact on nature, nature has little real impact on us.

3.6.2   *Why is our dependence on nature hard to get to grips with?*

How can we best frame the impact that nature has on human beings in order to neutralise or eliminate the less helpful aspects of the "Humanity finds a way" story?

The best candidate for this role is the concept of ecosystem services, which seeks to draw attention to the enormous value of the benefits we obtain from nature. It seems to us that the spirit of this approach must be right: but that there may be room for improvement in the way that it is framed, especially for the general public.

Existing research suggests that public consideration of provisioning, regulating and supporting services is low compared to consideration of cultural services. For example, the Define Research and Insight study (2007) into consumer understanding of the concepts and language around ecosystem services found that unprompted consideration of the value of natural environments was focused in four key areas: freedom, relaxation, health and hobbies. Only when *prompted* did participants identify fundamental benefits, such as clean air and water, trees, food from nature or flood regulation as priorities: and even then, the researchers note that participants "did not relate strongly to them at a personal level, because they have not experienced issues with these aspects".

This lack of engagement with provisioning, regulating and supporting services (as opposed to cultural services) was confirmed by our current research – with one or two notable exceptions (bees and trees) to which we shall return in the next section. Those exceptions apart, our participants demonstrated little awareness of or engagement with the provisioning, regulating and supporting services on which humanity depends. Only a couple of participants appeared to have made a generalised connection between the interdependence of living things in nature and processes on which we too depend.

> *I think, irrespective of what the species represents, I still think you need certain processes in the chain of life. For example, you can have a carnivore, the type of animal that will be part of the food chain to maintain the herd population at a certain size. It might become the dominant species, but you still need the carnivore, the herbivore, you still need the grass to feed the herbivore. So, from that perspective, you break the chain of life and I think... I think we're getting there now, with the bees and a few other things, I think we're going to start to see the scary side of us actually putting a big hole in the chain, if you know what I mean. [m, A2]*

> *If these things weren't around there would just be concrete blocks. We still need living things to help us live, we need food to eat, we need vegetables and fruit, so all these other things are needed, like the worms to turn the soil. It is like the food chain isn't it. [f, B3]*

We suspect that the issue here may lie not in knowledge levels but in everyday experience. As we saw in §3.4.1, most of our participants saw natural places as places in which natural processes are *allowed* to happen. Furthermore, as we saw in §3.3.1, there was a widespread recognition that, if human beings disappeared tomorrow, those same natural processes would

rapidly take over what are currently non-natural or human spaces. What follows from this? That human spaces – the places in which the bulk of our lives unfold – are created and maintained by *excluding* or *checking* natural processes.

Reflection on everyday experience provides further credibility for this hypothesis. Who has not had the experience of having to clear spiders or insects out of the house, or mosses and lichens from the patio? Who has not noticed the tenacity with which plants grow through cracks in concrete, or foxes making their homes in cities?

> *Man can control it but he can't stop nature, I mean you see a bomb site or an old derelict building, nature goes in there and starts reeling its way back. [m, B1]*

It is our hypothesis that nearly every part of a typical modern human experience in the UK confirms the view that human spaces are created and maintained by *excluding* or *checking* natural processes. Given this, it is not surprising if many people find it hard really to get to grips with the idea that those same human spaces are in fact *dependent* on natural processes. True as it may be, this is not part of our everyday *experience*.

Strikingly, one participant in our small groups seemed to be in the process of reversing this experiential tendency and recognising our dependence on natural processes, thanks to her new experiences as part of a community garden scheme in an urban area. The same participant had commented earlier that, until she had become involved in the scheme, she had been scared of worms, insects and creepy-crawlies:

> *See, to do with the dirt and the grass and the earth, I think that's down to the animals. As well as us helping them, I think they play the biggest part in keeping this… the environment the way it is, and if they were totally to be extinct I dread to think what the grass and trees would look like, if they weren't there picking the berries or digging out the grass or something like that. [f, Z]*

3.6.3   *Showing people how nature works for us*

If our hypothesis is accepted, what are the implications for the framing of ecosystem services. Stated simply, it underpins the need to *show* people how nature actually works for us (rather than just *telling* them that it matters or how much it is worth – see next section). Provisioning, regulating and supporting services need to be brought into the realm of everyday experience – in so far as is possible – in the same way that cultural services already are.

Supporting evidence for this contention is provided by the exceptions mentioned above – the few examples of ecosystem services (other than cultural services) which appear to have captured people's imaginations. There were two such exceptions in our workshops – each mentioned in more than one workshop: bees (the most popular) and rainforests (or trees more generally). Interestingly, each example is linked to a specific process for which people have some kind of working picture or metaphor. In the case of rainforests, for example, we were struck that the expression 'lungs of the earth' was used in separate workshops: while obviously a metaphor (in the same way that the ozone hole is a metaphor – see §2.3.1), breathing is a readily understandable process that enables people to get to grips with *how* we depend on nature.

By contrast, consider 'the value of inland wetlands to water quality', one of the ecosystem services referred to in the Foreword of *Biodiversity 2020*. In our very last group (with one of the small groups involved in a local project), the moderator asked if anyone knew where the water in their tap came from:

> *f1*   *Do you know, my daughter asked me that question today, where does the*
> *water come from. Do you know, I honestly could not answer, I said the*
> *reservoir, because that's as far as I knew, as much knowledge as I've got of*
> *where the actual water does come from when it goes from the reservoir. Do*
> *you?*
> *f2*   *It comes from the rain and into the reservoirs, and then they…*
> *f1*   *Filter it.*
> *f2*   *Filter it to make it safe.*
> *f1*   *I only knew from the reservoirs, I couldn't tell her.*
> *f2*   *And then they… my cousin works in [water company] so I've got kind of a little*
> *bit of knowledge. Yes, and then it goes through the pipes and out the tap. [Z]*

The moderator was not able to improve on this account of things. It is easy to be shocked by the proverbial city children who believe milk comes out of bottles; but with regard to ecosystem services, many of us are at an analogous level of knowledge.

3.6.4   *Downplaying the 'need' message in public engagement*

In recent years, much of the work on ecosystem services has focused on a complementary but importantly different task, supplying what Futerra (2010) call 'need' messages – an economic rationale for valuing the services provided by nature. Futerra argue that "Need is essential for policy makers and business. For these audiences, the Love message is too soft, and the economic rationale is a far stronger incentive for change." But they question the relevance of 'need' messages in a public context, arguing that they cannot engage people in the way that 'love' messages can. In the language of §2.3.1, we would say that 'need' messages deliver reasons, but not resonance.

While Futerra argue for the inefficacy of 'need' messages, Crompton (2010) argues that they are positively dangerous, tending to reinforce egoistic values which, in the long-term, undermine engagement with issues such as biodiversity.

To these two lines of argument, we may now add the point that, for public engagement purposes, we do not actually *need* 'need' messages anyway. As the previous sections of this chapter have demonstrated, there is a clear potential to frame biodiversity issues (and resolve the challenges around risk perception) in ways that appeal to neither egoistic values nor the economic value of nature. Certainly there may be a place for eye-catching statistics about the value of natural services in the presentation of messages: but, we would suggest, as colour and detail, not as a core part of the framing of biodiversity issues.

In §3.3.4 we described the "awe and wonder" people feel for the overarching process of growth, adaptation and recovery which is central to the "Nature finds a way" story. We suspect that it will not be hard to extend this "awe and wonder" to the more specific processes nature designs along the way, on which we too depend – things like the pollination of plants, the equipping of the planet with 'lungs', or the provision of clean water. We need to find ways of *showing* people how nature works for us, to head off the challenge of the "Humanity finds a way" story: but having done that, we are unlikely to need to *tell* them that it matters or how much it is worth (although the latter may well make for messages which add impact or reinforce motivations), because the processes described are in and of themselves sufficiently fascinating, wonderful and awe-inspiring.

3.7   "Humanity can't keep up"

3.7.1   *The good life*

In this section we consider a second story about humanity which could also play a role in a framing of biodiversity issues – at least for some audiences or in certain contexts. The story concerns not what we are doing to nature but what we are doing to ourselves. As we shall see, however, natural places feature in the story as places where we can undo some of the damage: and it is this which underpins the potential role of the story in engagement.

At the heart of the story is the idea that it is not only nature that can't keep up with the pace of modern human society: we can't either.

> m1:   *We do have a bizarre way of life now. It's so commercialised. You know, flat screen televisions and playstations and things like that. It's absolutely bizarre. I'm 40 and this is the way that life's gone.*
> m2:   *And it's gone like that so quickly hasn't it.*
> f: *It's scary, yeah. [A2]*
>
> f1:   *We are getting too advanced too quickly…*
> m1:   *Yes, we are far too advanced…*
> f1:   *Says me with my mobile phone in my bag.*
> m1:   *Look where we were 20 years ago and look where we are now, what an advance, it's unbelievable…*
> f2:   *The rest of the world can't keep up, nature can't keep up…*
> m1:   *We are going too fast. We are taking too many big leaps. We should be taking steps. [C2]*

For a number of participants, experiences of nature were associated with the idea of a simpler, slower lifestyle, less hemmed in by the structures and demands of modern life.

> *I think that for me life is moving too quickly so anything that I see as slowing it down or going at a pace I am more happy with …a more natural environment makes it feel like you are going at a slower pace, technology just speeds everything up and goes too quickly and I don't want that at 53. I would like to grow my own tomatoes, that would give me something to do, and I like the idea of raising chickens and having fresh eggs, why not? [f, B3]*

> *Everything is such a fast pace of life as well and going back to [nature] is slowing down a bit, letting it go by really I suppose. [f, B1]*

> *When I go out there it just… I just feel calmer. It's like, a calmness comes over me, like, you're just away. And everything's just… there's no, I don't know, no buildings, no structures. [f, X]*

> *There's no walls, there's no nothing. Pretentiously there's nothing, it is just pure naturalness in there. [f, Z]*

> *To me that is a natural place to be, it feels natural. You are not influenced by anything else, you have created what you are doing. [f, B3]*

> *You have this sort of formality [in everyday life]. That whole thing about having other people's agendas; I would just like to be…have the opportunity to live in the middle of nowhere, and the only agenda to have to follow would be the agenda of what came before I did. [f, Y]*

[The word 'natural'] kind of represents to me like a time when things were more simple… like I always joked that I want to go and live with the Amish because I just think like… I just love the way that they just… they grow their own food, they haven't got money, they haven't got complications, you know, they all work damn hard but it just seems a lot more simple and a lot more easy. [f, Z]

In particular, there was a strong connection between natural places and improved communication. Unsurprisingly, this was particularly strong among the small groups active in looking after a natural space, who had formed not only their own close bonds but also seen the wider local community drawn in by their efforts. But the mere fact of getting out into nature was seen by some as being enough to improve the quality of interaction between people.

It strips back technology. Most of the places we go to you have to abandon your car at some point on a boundary and walk in. You are not on your phones, you are doing things that are sort of away from… we have evolved quicker than the world has. It makes you get out of your cars, get on your walking boots and leave your phones and whatever else behind. […] It is more freedom, communicating more openly without having a screen or a piece of plastic in your hand… back to basics. [f, C2]

There is a clear sense here of returning to something simpler – getting back to nature – with the contrast between nature and technology being striking. Interestingly, for a few participants the definition of a natural place turned on the fact that something had been there for a long time – reminding us that the word 'natural' means not just something which (objectively) is the product of nature, but also something which (subjectively) feels familiar.

I think natural is something what's always been there in their lifetime. [m, A1]

It's part of something that's always been there, isn't it? [m, A3]

Participants who were drawn to this idea of a return to something simpler generally recognised that it was not practical to live like this any more in the modern world. Nevertheless, they felt that there was something they could take back into their everyday lives from their experiences of 'getting back to nature'.

In an ideal world it would be nice if you could plant your own potatoes and tomatoes and have your own crops, but the time scale of doing it isn't realistic for a modern lifestyle, the demands of work, family, the commitments you've got don't allow you to do that, and expense as well. [m, C2]

For me it is like taking away at least the memories if not the actuality of putting it into practice daily in life. To be at one with nature and then to look back on it and to try to incorporate it into different ways of living. [m, B1]

You can learn from it, there is stuff that you can do more natural. […] I grow my own fruit and veg that I never did before. So that is quite new to me, for about three years now. And that is from being out in the forest [on camping holidays]. There are a lot of things that I have that I don't really need. […] It is just more natural, I don't know, hard to explain. Something about it changes your way of thinking I think, and you think 'I don't need to do this' or 'I don't need to do that'. I can do that. It is learning from it. Haven't got a cow yet and do my own milk but it is coming! [f, B1]

I say basically let's go back to the good old days where we got dirty, we got mud under our nails, and we didn't care what we looked like, so basically try and not totally

go back to nature, but, you know, each and every person take a little bit out of their time to go back to nature, that's what I say. [f, Z]

3.7.2   *Passing something on to the next generation*

Impossible as it might be to live like this all the time, the possibility of reconnecting with nature was clearly very important to some of our participants. But there was also a concern that, with the direction society was taking, children in the future might lose this sense of connection with nature altogether – and a strong associated desire to pass on to children formative experiences and knowledge. (Note the use of natural processes – the cycle of life, evolution – as metaphors for this process of 'passing on' in some of the quotes that follow.)

Living in a city like we do, I worry that over time my children won't feel a connection to nature like I feel they should. [m, B2]

It does matter that children know where their vegetables are coming from. Everything is plastic wrapped in a supermarket, even down to tomatoes. When I grew up tomatoes come out of my dad's greenhouse and that's where you got them from. [m, Z]

You want children to enjoy the beauty that you did. It's really strange, I took them vegetable picking which is something I thought I would never do. But walking in the natural environment and pulling out the beetroot and all these things, it is the most beautiful thing. And when you go to these places, they really are so beautiful and so unspoilt. It's raw isn't it. It is the basis of everything, the basis of life. I suppose it is going back to the roots. [f, B2]

It gives me pleasure to bring what I had when I was a child to my children. It feels a bit weird, like it's like the cycle of life – taking my children as my parents took me. But it is exactly the same. I personally think it is really nice. [f, B2]

m1:   It has been passed on from generations. Your mum used to take you, you take your kids and they'll probably take their kids. It's evolution, isn't it?
m2:   It's natural to your kids…it will always be natural to your children as that's all they know. [C1]

I want to show them [my children] before they take off, you know, they can do whatever they like, but I'd like to show them what we did when we were kids. And my parents told me that they did the same thing when they were kids, and it goes on and on, and it'll always be there, so. […] It gives you a sense of being, and of placement. [m, A3]

There is something much more potent here than the idea of passing on nature to the next generation merely as a *resource*. Nature and natural places provide – at least for some people – a site for experiences and activities which are held in common *across* generations, in a way that a fast changing human world no longer does. They are the focus of traditional knowledge, passed on from generation to generation. They are the places where children can make the connections and have the experiences which their parents and grandparents made and had. Even if humanity can't keep up, nature – which changes on a very different timescale – provides a place where we can all still come together and remember who we are.

3.7.3   *Community, continuity and local spaces*

Perhaps not surprisingly, this aspect of nature as a focal point for community and continuity was an important theme in the small groups with people actively involved as volunteers in caring for a local place.

> *I mean, I'm coming up to retirement so I'm hoping to have a bit more time and I would like to pass on a bit of knowledge to my grandchild when I'm with her, but, I mean, I see all these wild flowers and I can't remember the names of them and I'd just like to know a bit more about everything that is in the park, because I'm sure there is a lot in there. […] Do you not think we have almost a duty to point things out to children, to help them be aware? […] And that's where I think we've got such an opportunity in that amazing space that we've got. And it grieves me that people aren't using it. [f, X]*

> *I feel like it's like the age old, like, foundation of, like, community and family, just to get together and share stuff, and it doesn't matter whether it's information or food or vegetables or anything else, you just get together and do stuff, and that's what makes community and it makes friendships and it makes families and it makes everything, that's what makes the world turn, you know what it's like. [f, Z]*

> *[Describing a bug hunt.] There was a sheer charm about seeing children involved in activities which I, as a child, did on my own, and with groups of friends, without adult supervision, in the local fields around where I grew up. […] The children were doing what I had done when I was young, and there was this kind of continuation. But the most… the highlight of that whole thing, for me, was not a child that was catching bugs and looking at them in the park, but actually, one of the fathers. […] He was entranced, absolutely entranced by the bug that his child had caught. And he was… watching the delight on his face, and I'm just thinking, you know, people… there's a point at which we all become disconnected with what is around us naturally, and for me, that just brought that home, about how you can so easily help people to just reconnect again. [f, Y]*

> *What my aim is in this garden is the children. Like, we want it as a growing plot, don't get me wrong, but we want to add to that, we don't want it just to be a growing plot. We want people to come in the garden and not just think, oh, because they're not growing vegetables they're not allowed in, we want it to spread to the children, to disabled, to teenagers, to elderly, we want everyone to join together like a community should do, join together, every age, every creed, every colour, all joining together and just distributing what they know, their knowledge of whatever they know. […] To see a ten year old playing with a sixty year old brought tears to my eyes, and that to me is what I class as natural. It naturally happened, do you know what I mean, there was no, you know, like – how can I explain it – there was no bullet points we had to stick to, we just naturally got together. [f, Z]*

As some of the quotations above indicate, living things can play an important role here, as the things that people are growing together, noticing together, or sharing knowledge about.

> *I think that relates to the education, that if you've got a lot of variety you will get children who are fascinated by insects, you get some that are fascinated by the birds, you get others that love the flowers, others that love the trees, and I think the more [variety] we have the more we're going to be able to switch on. [f, X]*

The relevance of this story to 'mass-market' framings of the issues is, we think, uncertain. But we suspect that the issues being discussed here will be very important in local, community based schemes, where the desire to reconnect – with nature, with each other, across generations, with what really matters, with oneself – may provide a core motivation for people to get involved. In particular, there is a strong resonance between this story and ideas of stewardship – whether that is growing one's own vegetables or helping to restore and maintain a local natural place.

3.8   Next steps for the framing task

No framing of biodiversity issues exists in a vacuum. It interacts with everyday stories about humanity and nature which are already circulating in our culture and bumping together in people's heads. In this chapter, we have reviewed four such stories; we have explored the reasons why those stories (and in particular the "Nature finds a way" story) create issues for a framing of biodiversity issues using the concept of 'biodiversity'; and we have drawn out a number of implications for a successful framing.

However, while we have outlined the ingredients of a more successful framing of biodiversity issues, we have stopped short of recommending an actual framing. That is a task not for researchers but for communications experts, drawing creatively on this evidence base. The task is unlikely to stop there, however. A better framing of biodiversity issues is likely to be arrived at not all in one go, but by an iterative process of, on the one hand, research and testing and, on the other hand, creativity and improvement.

It is also worth noting that there may well be more than one way of framing biodiversity issues, with different tacks required for different audiences or in different contexts. With this possibility in mind, there is an opportunity to build the next round of research and testing into a segmentation exercise. This opportunity is discussed further in the Conclusion.

Recommendations from Chapter 3

Indicators: n/a

Delivery: Candidate framings of biodiversity issues should be developed which:

- invoke both stories about nature ("Nature finds a way" and "Nature can't keep up"), but stick to the human timeframes of "Nature can't keep up": for example, using concepts such as 'making time for nature', 'creating space for nature', or 'helping nature to help itself'

- tap into awe and wonder at nature's capacity to grow, adapt and recover; and position living things as the products and agents of this process

- focus on the *imbalance* between the negative and positive impacts of human actions, celebrate the positive – and don't focus exclusively on the negative

- *show* people how nature works for us – not just *tell* them that it matters or how much it is worth

- draw on the idea of nature as a place where one reconnects – with nature, with each other, across generations, with what really matters, with oneself

Research: Further research and testing should be undertaken as part of the creative process of developing a framing of biodiversity issues. This research and testing should be incorporated into segmentation work.

4   Defining 'positive action'

Overview

An effective framing of biodiversity issues, drawing on the evidence set out in Chapter 3, would represent an important step towards achieving Outcome 4. It is, however, only one piece of a larger puzzle – just as Outcome 4 is only one component of the larger mission stated in *Biodiversity 2020*:

> *To halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.*

Delivery of Outcome 4 needs to be coordinated and prioritised in the way that best serves this overarching mission. Given the scale of the problem and constraints on resources and time, that means clear decisions not just about what to do, but also about what *not* to do. Nowhere is this clearer than in respect of the third element of Outcome 4: 'taking positive action'. There is a huge number of actions by a range of different audiences which *could* in some way be positive for biodiversity. In practice, it will be possible to prioritise and promote only a small number of these.

This prioritisation task has been taken forwards by the People Engagement Group, drawing on evidence from both the social and natural sciences. In this chapter, we clarify some of the complexities that can arise around the concept of 'positive action', and offer some key distinctions to guide the ongoing process of prioritisation.

Positive actions are actions that have a positive **impact** on biodiversity, either now or in the future. However, we need to distinguish different kinds of impact:

- Direct impacts on biodiversity

- Impacts on other agents

- Impacts on environmental pressures on biodiversity

- Impacts on the person performing the action (e.g. increased engagement)

We should also note that **'positive inaction'** – refraining from an action that would have a negative impact – may be as important as 'positive action' from the narrow perspective of an arithmetic of impact.

Clarity about these different types of impact can help us to i) exclude certain kinds of impact from consideration where appropriate; ii) avoid comparing 'apples and oranges'; iii) be disciplined in spelling out (and rigorously challenging) the assumptions we are making when we claim that an action is positive for biodiversity.

Another way of classifying actions is not by the kind of impact they have, but by the **domain or context** in which they are taken. Domains or contexts provide a sensible way of retaining focus in campaigns which span a number of different pro-biodiversity behaviours. They should be defined in ways that reflect how people themselves make sense of their own actions, e.g. "supermarket shopping" or "gardening".

Whenever one prioritises a particular positive action (or domain or context of action), one is by the same token identifying and prioritising a **group of people** who have the relevant *behavioural options*. This is true not only for narrowly defined priority groups, but also for the overlapping mass-market groups that we typically blur together into one ill-defined entity, the

'general public'

The tier definition includes a behavioural element: but we anticipate that this will need to be supplemented with tracking of some specific priority behaviours. These are unlikely to be the behaviours currently being used as indicators for Outcome 4.

4.1   Action and impact

4.1.1   Different types of impact

What makes an action 'positive'? In the context of *Biodiversity 2020*, the answer must be that the action has positive consequences for biodiversity either now or in the future: for example, planting wildflowers in your garden has positive consequences not just for populations of those flowers but also for native insects, birds, etc.

The example given here is a good place to start because the impact on biodiversity is relatively direct. More often than not, however, this is not the case. Many actions which are described as positive in the literature, for example, have *indirect* rather than direct impacts on biodiversity: the action has a direct impact on something or someone else, which in turn has a direct impact on biodiversity. In many cases there are chains of consequence, with biodiversity somewhere at their dim extremity.

To make matters even more complex, it is possible to distinguish at least three different kinds of link in these chains:

- Impacts on other agents. For example, choosing to buy shade-grown coffee is expected to have an indirect impact by influencing other actors back along the supply chain.
- Impacts on environmental pressures on biodiversity. For example, there is a raft of behaviours associated with reducing CO_2 emissions, included by some – the European Commission Directorate-General for the Environment (2011) for example – as positive actions for biodiversity.
- Impacts on the person performing the action. For example there is a plausible argument that taking part in a biodiversity monitoring event has an impact on the levels of engagement of the person who takes part (over and above the value of the data gathered).

Cutting across all these different types of direct and indirect impact, moreover, we should note one further distinction. If what we are primarily concerned with is the consequences of what people do, then we should be as interested in 'positive inaction' as in 'positive action'. For example, someone who accepts their council's decision to convert the local park to a wildflower meadow, even though they think this looks untidy, is doing something positive when they refrain from complaining. From the narrow perspective of an arithmetic of impact, refraining from doing something which would have had negative consequences is equivalent to actively doing something with positive consequences. In what follows, we use the term 'action' as shorthand for 'action or inaction'.

4.1.2   Practical implications

How does clarity about these distinctions help in a practical way in the process of setting priorities? We would suggest three broad uses.

First, it may be appropriate to decide to exclude certain impacts from consideration. This might be the case, for instance, where actions with a certain kind of indirect impact (e.g. behaviours

associated with reducing CO_2 emissions) are already being promoted by others. The previous Biodiversity strategy (Defra, 2007) explicitly took this approach.

> *While many of the behaviours being promoted through wider environmental programmes, such as greater energy- and water-efficiency, deliver benefits to biodiversity, the effects of these are largely indirect. The following behaviours which the partnership believes should be promoted will have a more direct relevance to the conservation of biodiversity:*
>
> - *Create, or encourage others to create, wildlife friendly spaces – at home, in your local community and through work*
>
> - *Enjoy (and value) your local wildlife-friendly space and share this enjoyment with others*
>
> - *Support the work of wildlife conservation organisations*
>
> - *Think before you buy, for example wildlife-based products or souvenirs from overseas trips; buy wildlife/environmentally-friendly/sustainably-sourced products*
>
> - *Record what you see and send results to your Local Records Centre*
>
> - *Exercise your civic duties to ensure those that represent your views reflect your environmental concerns*

Note that, while impacts on environmental pressures are explicitly excluded in the opening paragraph, the list of included actions still includes many with indirect impacts on biodiversity (and with direct impacts either on other agents or on the person performing the action): the term 'indirect' is being used in the passage above narrowly to refer to just one kind of indirectness.

Secondly, even where exclusions are not made, it may be very useful in prioritisation discussions to note the different kinds of direct and indirect impact in play, to avoid the problems that arise from comparing apples and oranges. To provide a deliberately simplistic example, imagine two people debating whether resources should be focused on encouraging people to plant wildflowers in their garden or to take part in biodiversity monitoring events. There are many reasons why this would be a hard decision to make: one of them, the potential confusion that can arise from the very different kinds of impact that these two types of 'positive action' have, can be addressed simply by being explicit about the differences.

Thirdly, and building on the above point, awareness of the different kinds of impact an action can have reminds us of the need to spell out (and challenge) the assumptions we are making when we claim that an action is positive. In most cases, we lack the evidence to predict with certainty the impact of specific actions; indeed, given the complexity of the physical and social systems on which we hope actions will have an impact, such predictions are probably impossible in principle. Nevertheless, the process of explicitly articulating *how* an action is supposed to have an impact can help to highlight gaps, raise new questions and so sharpen one's efforts.

Consider, for example, the assumption that consumers will have a positive impact on biodiversity if they make pro-biodiversity choices. This action is sometimes presented as if it were one with a direct impact: but in fact, as noted above, the impact is on a supply chain, and the agents in that supply chain may not always obediently respond by adjusting supply to meet demand. For instance, retailers or suppliers may instead invest heavily in marketing to restore demand for their original products. Explicitly articulating how consumer choices are supposed

to have a positive impact helps us to reach the (by now familiar) conclusion that retailers and suppliers need to be part of the partnership.

We saw another example of the value of such explicit articulations in §2.4, where we discussed the impact of adult and childhood experiences of nature on engagement. Forcing oneself to spell out the mechanism by which such experiences are supposed to have an impact draws attention to the probable importance of the *kind* of experience a person has.

4.2   Domains and contexts of action

4.2.1   *Frameworks for defining different domains and contexts of action*

Another way of classifying actions is not by the kind of impact they have, but by the domain or context in which they are taken. The actions (or inaction) which could have a positive impact (direct or indirect) on biodiversity span many such domains or contexts, and a number of frameworks for thinking about this diversity have been offered in the literature.

For example, Stern (2000, cited in Hoppner & Whitmarsh 2011) offers a high-level framework of environmentally significant individual behaviours (Figure 8), which is equally applicable to biodiversity related behaviours.

Figure 8: Types of Environmentally Significant Behaviours (Stern, 2000)

Public Sphere	Environmental activism (e.g. taking part in a demonstration)
	Non-activist behaviours in the public sphere (e.g. signing a petition, joining an environmental organisation)
Private Sphere	Private sphere environmentalism (i.e. the purchase, use and disposal of personal or household goods)
Organisational	Professional or organisational decision making (e.g. a designer may use only sustainable materials in his or her products; a banker may invest only in ethical firms)

Futerra (2010) offer an alternative classification into five broad spheres of action: activist, supporter, doer, employer and consumer. Note that Futerra here characterise each sphere of action by the *role* being played by the agent – an important equivalence to which we return in §4.3.

Other frameworks focus on just one of the spheres identified in Stern's framework. In *A Framework for Pro-Environmental Behaviours* (Defra, 2008), for example, private sphere actions are classified into five behavioural domains and four contexts/consumption clusters (Figure 9) – with distinctions also being made between low and high impact actions, and one-off versus regular decisions.

Figure 9: Categories of private sphere actions (Defra 2008)

Behavioural Domains	**Consumption Contexts**
Personal transport	Homes
Domestic energy use	Food
Domestic water use	Transport

| Eco-friendly shopping | Tourism |
| Waste behaviour | |

Public sphere actions can be similarly classified – for example, as individualist actions, contact with authority or collective action (Pattie et al 2003, cited in Hoppner & Whitmarsh 2011).

As part of a wider review for Defra, Bell & Vanner (2011) explored in detail the varieties of collective action in the public sphere. Their framework, along with examples of cooperative civic actions identified, is presented in Figure 10.

Figure 10: Types of Co-operative Civic Action (Bell & Vanner 2011)

Types of Cooperative Civic Action	Examples
Community-led campaigns, activism or advocacy	Campaigning against a proposed development that threatens local natural areas of importance, against levels of local air pollution, or perhaps in an effort to change mainstream practices with particularly adverse environmental impacts.
Collective action linked to sustainable lifestyles	Community recycling schemes e.g. community recycling enterprises, furniture recycling, community composting, charity shops;
	Collective transport schemes e.g. walking buses, car clubs, car-free days;
	Community energy initiatives e.g. community owned renewables, and the notion of 'energy citizenship'.
	Local food growing initiatives e.g. community gardens, allotments, school gardens, farmers markets, community vegetable box schemes, community supported agriculture schemes
Collective action linked to the protection, maintenance, monitoring, restoration and / or other enhancement of community green spaces and other local natural environments	Ecological *restoration* of open spaces or water bodies, such as stream clean-ups, restoration of derelict land.
	Contribution to the *maintenance* and *management* of green spaces and water bodies e.g. stream water quality monitoring, invasive species control, trail maintenance, contributing to the ongoing stewardship of agricultural land.
	Conservation activities on sites with some form of protected area status
	Species monitoring and amateur naturalists

Appendix 2 summarises the huge range of suggestions we have encountered in the literature for positive individual action for biodiversity in the private, public and organisational spheres. The list includes actions with a full range of direct and indirect impacts.

There are, however, very few examples of positive actions in the organisational sphere in the list. This reflects the fact that there is little discussion of positive action in the workplace in the literature reviewed. This may be a significant oversight, as members of 'the public' also have roles in organisations, and may have as much (or more) scope for positive influence in these organisational roles as in their private roles as consumers, citizens or gardeners. The influence exerted by people *as* employees may be a significant factor to be borne in mind in achieving Outcome 4.

4.2.2   *Practical implications*

Why does the distinction between different domains and contexts of action matter? In §2.2 we discussed the ways in which contextual factors – social and physical – can have a significant impact on engagement and behaviour. When I walk into a supermarket, for example, the context is rich with behavioural cues, from the packaging of individual items and their positioning on shelves to the lighting, temperature and smells in the store. Moreover, when I walk into the supermarket I may be taking on a particular social role – that of the family shopper, for example – which carries with it a set of norms and considerations which don't apply in other contexts. By understanding the dynamics within different domains or contexts of action, and the roles people take within them, we can begin to understand what it would actually take to promote desired behaviours, who is best placed to do the promotion, and whether the effort is warranted by the likely impact.

The idea of a domain or context of action – with associated roles – may also provide a pragmatic response to the question of whether engagement activity should focus on behaviours or on issues.

Many of the campaigns which are held up as examples of success have focused on single, clearly defined behaviours – such as wearing a seatbelt, or stopping smoking. The same applies to much commercial marketing, which typically focuses on the critical question of whether or not people purchase a product or service. By contrast, there is a huge range of different behaviours which could have a positive impact on biodiversity. This has lead some to argue that an issue-focus is necessary: so pressing is the problem that there simply is not time or resource to address behaviours one at a time.

On the other hand, the problem with taking an issue-focus is that, as a rule of thumb, the more generally the issue is defined, the weaker the correlation between concern (or other attitudinal measures) and behaviour. For instance, one of the most tested models of behaviour, the Theory of Planned Behaviour (see Appendix 1), achieves relatively high levels of correlation between attitudes and behaviours only by specifying that the attitudes are in relation to *that specific behaviour*, not to some broad underpinning issue. Put simply, it is not at all clear that building concern about a *broad* issue translates into specific examples of changed behaviour (an example of the so-called value-action gap).

Taking an issue-focus can also risk leaving the individual to do all the hard work. For instance, it is one thing to raise my concern about climate change, another thing entirely to expect me to invest time and energy in working out what I am meant to do about it (especially if experts in the field cannot make their minds up). Hence the common wisdom that campaigns need a clear call to action – which is to say, a behaviour-focus.

The idea of domains or contexts of action provides a pragmatic midway point between the two extremes of behaviour-focus and issue-focus. To provide a single very practical example, this might mean framing up a specific campaign around, say, wildlife-friendly gardening. This campaign might be associated with a wide range of actions – it is not focused on single behaviours – but all within that specific domain of action – it does not aim to cover off the entire issue either.

Note that, for these purposes, the definition of a 'domain' would need to be flexible and pragmatic, with the question of how agents themselves make sense of and divide up their own experience being paramount: the gardening domain, for example, might include behaviour in garden centres when buying seeds, but perhaps not when selecting a new barbecue.

4.3   Actions and audiences

We noted in §4.2.1 the association between certain domains of action and specific roles. Not all of those roles, however, are taken on by everyone. Or, to put the point another way, not every positive action can be performed by everyone. Different people have different behavioural options.

The point is an obvious one if we consider those roles which are tightly defined by things such as circumstances, training or employment. *Biodiversity* 2020, for example, identifies a number of priority groups "which have particular influence over biodiversity". These groups, owing to their roles, have *behavioural options* which give them a particularly important part to play in achieving the ambitions of *Biodiversity 2020*. Farmers, to take just one example, make choices about how to farm their land which simply do not arise for non-farmers.

Narrowly defined groups such as these are often contrasted to the 'general public', who are associated with mass activities such as gardening, supermarket shopping or voting. In fact, however, each of these classes of activity has its own associated role or group, either because of concrete limitations on behaviour – only those who have access to a garden or are over 18 can engage in gardening or voting – or as a function of social roles – supermarket shopping may be largely the responsibility of one or two individuals in many families.

While the distinction between priority groups and 'the general public' may be useful in practice, it is worth remembering that in fact there is a continuum between smaller, tightly defined groups and larger, more mass-market groups. What define all of these groups are their roles and behavioural options.

Whenever one prioritises a particular positive action or (domain or context of action), one is by the same token identifying and prioritising a group of people who have the relevant *behavioural options*. This is true not only for narrowly defined priority groups, but also for the overlapping mass-market groups that we typically blur together into one ill-defined entity, the 'general public'.

4.4   Indicators for 'taking positive action'.

In Chapter 1 we recommended the development of indicators for 'engagement with biodiversity issues' based on a tier definition. The tier definition includes behavioural elements: but we anticipate that these will need to be supplemented with tracking of further specific priority behaviours.

As previously noted, the current indicators for public engagement (Defra, 2012) comprise three such behaviours: visiting the natural environment several times a week; engaging in conservation volunteering (in a formal, recorded way); and undertaking wildlife gardening.

It is our view that – in so far as is pragmatically possible – behaviours selected to stand as indicators for Outcome 4 should reflect actual priorities, based on consideration of the issues set out above. We are not in a position to judge whether or not the three behaviours above actually are or should be the priorities for biodiversity engagement. However, we would make three observations.

First, given the discussion in §2.4 of the role of experiences of nature in driving engagement, and the lack of evidence for the sweeping claim (made in *Biodiversity 2020*) that "the level of direct contact with nature is a factor in influencing attitudes towards it", it would surprise us if an increase in the number of people merely visiting the natural environment several times a week (with no reference to the kind of experience they were having) were a priority for biodiversity strategy.

Secondly, while the other two behaviours highlighted may well be priorities, it is striking that both are actions with direct impacts on biodiversity. It is surprising that the indicators do not include actions with indirect impacts – in particular, those with indirect impacts on other agents, such as consumer behaviour or citizen preferences. The same considerations apply to UK-wide indicators published by the JNCC (2012), which single out 'volunteer time spent in conservation' as the sole indicator of 'taking action for nature', although work is ongoing to develop indicators in this area.

Additional behaviours to be tracked by indicators might also include examples of what we have earlier called 'positive inaction'. We would suggest that, alongside efforts to promote specific actions by specific groups, a core goal for engagement activity should be to build society-wide demand for and acceptance of pro-biodiversity measures. Indeed, this is implicit in the strategy, which states in the rationale for Outcome 4 that: "Public understanding and opinion on the value of biodiversity has strong implications for the acceptance and adoption of conservation measures."

Thirdly, given the importance which the strategy places on 'putting people at the heart of biodiversity', and the clear desire to see engagement activities integrated with other strands of activity, there is a clear case for including key behaviours by priority groups, as well as by those groups which are large enough to be considered the 'general public'. This would be a good way of reinforcing the interdependence of Outcome 4 with the other three Outcomes in the strategy.

Recommendations from Chapter 4

Indicators: Priority behaviours should be identified as indicators for 'taking positive action'. While not in a position to judge what these should be, we note that:

- An increase in the number of people merely visiting the natural environment several times a week (with no reference to the kinds of experience they are having) is unlikely to be a useful indicator.

- It is surprising that the current indicators include no actions with indirect impacts on biodiversity – such as consumer behaviour or citizen preferences – and no examples of 'positive inaction'

- There is a clear case for indicators for key behaviours by the priority groups identified in *Biodiversity 2020* (including those working in agriculture, forestry, planning and development, water management, or marine management and fisheries), and not just by those groups which are large enough to be considered the 'general public': this would be a good way of reinforcing the interdependence of Outcome 4 with the other three Outcomes in the strategy.

Delivery: Engagement activities should be focused on domains or contexts of action (e.g. "supermarket shopping" or "gardening") as a way of retaining focus in activities which span a number of different pro-biodiversity behaviours: these domains or contexts should be defined in ways that reflect how people themselves make sense of their own actions.

               The assumptions being made when it is claimed that any particular action is positive for biodiversity (including actions that have long been assumed to be positive) should be explicitly spelled out and challenged.

Research: Decisions on priority pro-biodiversity actions (or domains and contexts of action) should be made in advance of further segmentation work and, in so far as practical, built into the design of the segmentation study.

Conclusion: towards a biodiversity segmentation

Overview

What role could segmentation play in taking forward work to deliver Outcome 4 and the Biodiversity Strategy more widely? The validity of a segmentation is defined by the purpose for which it is developed. At first sight, Outcome 4 offers *three* distinct purposes for which a segmentation might be developed:

- Engaging more people in biodiversity issues

- Making more people aware of biodiversity's value

- Getting more people to take positive action

There is clear potential for combining these purposes in a single study. For clarity, however, we first discuss the three purposes separately, before presenting a recommendation for combining them in a single study. For each purpose, we consider:

- What elements of the current study would the segmentation draw on?

- What further decisions would be required as inputs?

- What would the universe of segmentation be?

- How might the segmentation be used in practice?

We begin with a general overview of segmentation aimed at the non-technical reader.

Introducing segmentation

What is segmentation?

Segmentation is a pragmatic response to the limitless diversity of human beings. It may be useful in any situation in which one has to design a product or service for, communicate a message to, bring about a change in, or achieve an outcome with a large population.

The key driver for segmentation is a recognition that one size does not fit all: treating everyone as if they were the same is (often) an ineffective approach. Indeed, the truth of the matter is that no two human beings are the same: each of us is a unique individual. Faced by a large population, however, it is simply not practical to tailor at an individual level. Segmentation represents a compromise between the ineffective simplicity of a one-size-fits-all approach and the impractical accuracy of individual tailoring.

A segmentation is *not* a description of reality, and should *not* be read as saying "there are x types of people in the world". To offer a simple parallel, there are not really four sizes of human beings in the world: S, M, L and XL. However, for certain purposes – manufacturing T-shirts, for example – acting as if there were just these four sizes of human beings is a sensible compromise between one-size-fits-all and individual tailoring. A segmentation is a pragmatic simplification of reality, and should be read as saying "for certain defined purposes, it is legitimate to behave *as if* there were x types of people in the world". (As well as classifying people, segmentations can also be used to classify households or organisations: the same considerations apply.)

While a segmentation is not a description of reality, the best segmentations do have *explanatory* power: they not only reflect patterns in how people are, but provide some

indication of why those patterns exist. It is this feature of segmentations that makes them valuable for people who want to promote change – be that change in behaviour, change in engagement, or any other kind of change. A good segmentation explains why people think and act as they do, so that one can identify strategies to encourage them to think and act otherwise. As noted previously, this explanatory power is also what distinguishes segmentations from tier definitions of the kind presented in Chapter 1.

It is our firm view that the validity of segmentations is defined by the purposes for which they are developed. A segmentation developed for one purpose may or may not be of use for other purposes. For example, a T-shirt segmentation is of some use (but not ideal) for manufacturing shirts, of minimal use for manufacturing suits, and of no use whatsoever for manufacturing shoes. This view is not universally shared, however. For example, the Values Modes segmentation, which is popular in the sector, "explains the dynamics of personal, market and cultural changes" (http://www.cultdyn.co.uk/valuesmodes.html) and claims universal applicability. So far as we are aware, the analysis behind this and comparable commercial models is not available for scrutiny.

Using variables in segmentation

A number of different types of variable can be used in a segmentation. Figure 11 below summarises some of the most common ones.

Figure 11: common segmentation variables

Variable	Discussion/examples
Psychological variables	This heading covers a wide range of variables, including knowledge, attitudes, needs, motivations, values, and so forth. The factors discussed in §2.1 belong under this heading.
Contextual variables	This heading covers aspects of the individuals physical and social context (in so far as those can be linked firmly to an individual). For example, 'parent' is a relational description of an individual, which implies a particular social role. The factors discussed in §2.2 belong under this heading.
Behaviour	To describe people as 'volunteers' is to identify a segment of the population based on behaviour
Roles/behavioural options	Roles determine the kinds of behaviour that are available to a person. For instance, only farmers have the option of changing their farming methods. This heading corresponds to our discussion of 'types of agent' in §4.3
Stage of change	Models such as the Transtheoretical Model suggest that it is possible to distinguish people on the basis of their stage of change (pre-contemplation, contemplation, etc). At a larger level, people may be distinguished by lifestage – the assumption being that life itself follows a characteristic pattern of change. Key moments of change (e.g. moving house) may also be singled out.
Readiness to change	For example, the segmentation of people into 'early adopters', 'laggards', and so forth has become part of popular wisdom.
Barriers to	From the perspective of practical use, identifying the different barriers

change	faced by different segments can be of critical importance.
Influence	To describe people as 'role models' or 'celebrities' or 'opinion-formers' is to ascribe them to an informal segment based on their influence on others. In recent years, terms like 'maven' and 'connector' have been popularised.
Channels	Phrases like 'Guardian reader' or 'Twitter user' offer groupings of people based on the communications channels through which they can be reached (or through which they reach others).
Location	For example, the key selling point of some commercially available segmentations (such as Acorn or Mosaic) is their ability to link segments to postcodes.
Demographics	Demographics are often used to define simple segments. For example, MENE data (in line with much similar data) is broken down by demographic variables such as age or social class.

Segmentations differ widely in both *which* of the above variables are used and *how* they are used. In understanding a segmentation, it is important to distinguish:

- The variables which determine the *universe* of the segmentation. This may be everyone (although in practice, 'everyone' is often limited in some way: e.g. everyone over 16 in the UK), or it may be some pre-defined group of particular interest (e.g. farmers).

- The variables used to *define* segments. These are the actual variables that have been used to sort individuals into groups. They may be pre-defined (e.g. drawn from theory), or they may be factors identified by statistical analysis of data.

- The variables used to *profile* segments. As well as defining segments, it is customary to profile them – e.g. claims of the form "Segment X is younger than average". Profiling claims are usually based on statistically significant variations between segments, and should not be taken as descriptions of everyone in the segment. For instance, the claim above does *not* imply that every *individual* assigned to segment X is younger than average.

Appendix 3 provides an overview of a number of existing segmentations with potential relevance to biodiversity which have been identified.

Segmentations for distinct purposes

Purpose 1: engaging more people in biodiversity issues

A segmentation focused on engagement would take as its starting point the definition of 'engagement in biodiversity issues' provided by the tier definition in Chapter 1. The primary aim of such a segmentation would be to explore the various reasons why people are in specific tiers, and to establish what would lead to them moving into a different tier – drawing on the review of engagement factors in Chapter 2.

Consider, for example, Tier 3 – the tier in which we clearly see the value/action gap. There are a number of possible explanations for this gap: individuals may not know what it is that they can actually do; or they may know, but doubt taking action would really make a difference; or they may simply forget about biodiversity in the contexts when they could take action; or the relevant actions may not be readily made possible by their context; or any of many other possible explanations. It is unlikely, moreover, that the population in Tier 3 is homogenous in

this respect: we can expect to see different patterns of explanation for the value/action gap in different segments. Moreover, these different patterns will imply different kinds of intervention to move people into tiers Tiers 4 or 5, with different associated levels of effort and probabilities of success.

In this way, a segmentation exercise would enable us to

- prioritise segments *within or across tiers* which represent the best value for money for engagement activity – based on segment sizes, ease of engagement and probability of success

- develop tailored approaches which target these segments.

In principle, segmentation focused on engagement could be carried out with the entire population. There is a strong case, however, for focusing attention on specific tiers. For example, as noted in §1.3, there is good reason to suspect that Tier 2 – those who are aware of biodiversity loss but not concerned – may be the hardest to engage. In light of this, there is a case for excluding Tier 2 from a segmentation exercise. At the other end of the scale, the fact that Tier 5 are already highly engaged means there is a case for excluding them too. Limiting the universe of a segmentation in this way is intellectually unappealing, as most of us would instinctively prefer a model that covers everyone and everything. At a practical level, however, it may represent better value for money, allowing larger sample sizes and greater granularity of explanation among those sections of the population we actually hope will change. The scope of a subsequent biodiversity segmentation needs to be discussed amongst key stakeholders before such decisions on the sample universe can be made.

Segmentation option 1	
Purpose	Engaging more people in biodiversity issues
Relevant elements of this study	Tier definition Review of engagement factors
Further decisions needed	Specification of universe
Universe	General population OR target tiers
Practical use	Prioritise segments *within or across tiers* which represent best value for money for engagement activity – based on segment size, ease of engagement and probability of success Develop tailored approaches which target these segments

Purpose 2: making more people aware of the value of biodiversity

In §3.8, we discussed the next steps for the task of framing biodiversity issues. The immediate next step, we suggested, is a creative one – drawing on the material presented in Chapter 3 to develop candidate framings – but following this, further testing and research will be required. Given that there may be more than one way of framing biodiversity issues, with different approaches required for different audiences or in different contexts, there is an opportunity to build this next round of research and testing into a segmentation exercise.

A segmentation exercise focused on awareness of biodiversity's value would explore which potential framings of biodiversity issues had most resonance *either* with different segments, *or*

in different domains or contexts of action, *or* for intersections of the two. Such a segmentation would enable communicators to select the best framing for different circumstances, or, where a single framing was required, to make choices based on achieving the maximum appeal with target audiences.

Segmentation option 2	
Purpose	Making more people aware of biodiversity's value
Relevant elements of this study	Qualitative work Review of engagement factors
Further decisions needed	Creative development of candidate framings Specification of target audiences if required
Universe	As required – general population or target audiences
Practical use	Guide selection of best framing for specific audiences and/or contexts Where a single framing is required, guide choices to ensure maximum appeal with target audiences

Purpose 3: getting more people to take positive action

Any segmentation focused on positive action would need to start with a question: which actions (or domains or contexts of action)?

As noted in §4.3, whenever one prioritises a particular positive action (or domain or context of action), one is by the same token identifying and prioritising a group of people who have the relevant *behavioural options*. That group can become the universe for a well-defined segmentation focused on that action (or domain or context of action). For example, Pike (2008) has offered an analysis of the range of factors that influence farmers in their farming decisions, which identifies patterns of motivation and attitude:

> *farmers' business and land management decisions are influenced by factors other than profit, including perceptions of risk, attitudes (including attitudes towards new technology, government and the future of the agricultural sector), issues of family life cycles and succession, and the opinions of other farmers and the professionals with whom they interact. […] It is essential that policy analysis and appraisal is informed by models that reflect this wider range of factors which influence farmers' decisions.*

Pike's model gives us insight into the dynamics of farming behaviour which enables us to tackle questions such as how we might promote pro-biodiversity behaviour differently with different segments, who might be best placed to do so, what the chances of success are with each segment, and so forth.

What applies to farmers also applies to the larger, mass-market groups that are normally lumped together as the 'general public' – groups such as gardeners, consumers or citizens. While it is possible to develop an action focused segmentation covering multiple domains of action when the groups associated with those domains overlap significantly, those multiple domains/audiences still need to be specified at the outset. With a focus on taking action, one cannot simply set out to segment the 'general public', because one must always ask 'the general public *in what capacity or capacities?*'

It is also worth noting that, on a practical level, where a segmentation covers multiple domains of action, it will afford less explanatory granularity within each of those domains. Time and cost constraints mean that questionnaires and sample sizes are limited. Limiting segmentation to a few priority domains or actions may be intellectually less appealing, but may offer better value for money.

Segmentation option 3	
Purpose	Getting more people to take positive action
Relevant elements of this study	Discussion of issues around 'positive actions', as basis for priority-setting Review of engagement factors
Further decisions needed	Decisions about priority actions/domains of actions
Universe	Groups (defined by behavioural options) associated with priority actions/domains of action – note that a separate segmentation exercise would be required for each distinct group, although significantly overlapping groups could potentially be combined
Practical use	Prioritise segments which represent best value for money for activity to promote action – based on segment size, ease of engagement and probability of success Develop approaches to target these segments

Recommendations for a single study

As noted previously, there is clear potential for combining these purposes in a single study.

However, the discussion above should also have made it clear that it is not possible to do *everything* in a single study. In particular, there is real need for clarity about the priority actions (or domains and contexts of action) which a segmentation should address. The practicalities of questionnaire design (and the limitations on questionnaire length in particular) mean that it would be wise to keep the focus on a small number of priority actions/domains of action which are available to a large proportion of the population – for example, actions by consumers. There is a trade-off to be made here between explanatory granularity and breadth of coverage.

Our recommendations for further segmentation work, building on this report, have already been made at the end of the preceding chapters. They are as follows:

- A full-scale segmentation should be undertaken, building on the tier definition, to identify i) the reasons why people sit in particular tiers and ii) the most effective interventions to enhance levels of engagement with biodiversity (e.g. by closing the value-action gap).

- This full-scale segmentation should take account of a full range of individual, contextual and framing factors, and explore how they are implicated in differing levels of engagement.

- Further research and testing required as part of the creative process of developing a framing of biodiversity issues should be incorporated into segmentation work.

- Decisions on priority pro-biodiversity actions (or domains and contexts of action) should be made in advance of further segmentation work and, in so far as practical, built into the design of the segmentation study.

APPENDICES

Appendix 1: review of literature on engagement factors

Individual psychological factors

Psychologists from many sub-disciplines have been actively involved in research on environmental issues for several years. These issues have become recognised as a sub-discipline in their own right, with environmental psychology being included as a module on many undergraduate psychology degrees. The foremost journal within this area is *The Journal of Environmental Psychology*, which is still in robust health having been published by Elsevier since 1980.

As Burke, Prior & Spehr (2010) note:

> There is a strong consensus among psychologists and other scientists that human motivations and behaviours constitute core causal factors with respect to environmental problems (e.g. Gardner & Stern, 2002). […] Several key articles by eminent psychologists have been published […] stressing psychology's essential role in addressing climate change and environmental threats (e.g. Kazdin 2009).

When talking of individual psychological factors, we refer to the concepts of attitudes, motivations, values, perceptions of risk and so on. In relation to the environment in general, and biodiversity specifically, the Theory of Planned Behaviour and Value-Belief-Norm Theory are two overarching theories which have been applied to explore the impact of such constructs on pro-environmental behaviours. In addition to these theoretical frameworks there are streams of research that have explored individual constructs such as risk perceptions (Slovik, Finucane & Peters, 2004). These dominant theories and individual constructs are reviewed below.

Prior to this review, Figure 12 offers definitions of some of the most important psychological constructs (adapted from Roca, 2012).

Figure 12: Definition of psychological constructs

Construct	Definition
Attitudes	The degree to which a person has a favourable or unfavourable evaluation of a behaviour or object
Subjective norms	Perceived social pressure from important others to perform or not perform a given behaviour: (1) pressure from people whose opinion is valued (2) perceived pressure from important people (3) expectation in general
Perceived behavioural control	(1) Self-efficacy: the perceived ease or difficulty in performing a behaviour (2) Controllability: the degree of control felt over the performance of the behaviour
Moral norms	(1) Perceived moral obligation of performing the behaviour (2) The degree of regret anticipated if the behaviour is not

	performed
Group norms	(1) Descriptive: the perceptions of whether other people in the relevant group (e.g., farmers) perform the behaviour
	(2) Injunctive: perceived pressure from other people in the relevant group (e.g., farmers) to adopt the behaviour
Response efficacy	The degree to which performing a specific behaviour is believed to deliver the desired outcome
Self identity	The degree to which the person sees a given behaviour as a defining part of him/herself
Social identity	The degree to which a person sees themselves as part of a group to whom the behaviour is particularly relevant

The Theory of Planned Behaviour

The Theory of Planned Behaviour (Ajzen, 1991) is a social-cognitive model of behaviour. 'Social' because it holds that most (if not all) behaviour has social determinants, and is enacted within a social context; 'cognitive' because it holds there are various thought processes that are undertaken to form a behavioural intention and subsequent action. The rise of social-cognitive models of behaviour within the wider field of psychology can be traced back to a review of attitude-behaviour relations published in the sixties (Wicker, 1969). This review found that attitudes had generally been revealed (in relevant psychological research to that point) to be rather poor predictors of behaviour.

Rather than turn their collective backs on the idea that behaviour was driven by what you think about things, social psychologists looked instead to factors that might moderate the relationship between attitudes and behaviour. Following on from the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behaviour (see Figure 13) suggested that:

1. Actions are driven by behavioural intentions

2. These intentions are driven by:

    a. attitudes (how positively you rate the experience and outcome of performing a specific behaviour)

    b. subjective norms (what you believe other relevant people or groups of people feel about you performing the behaviour in question)

    c. perceived behavioural control (the extent to which you feel the ability to perform a behaviour is within your direct control)

3. Feelings of control (especially low control) may have a direct effect on behaviour that is not mediated by behavioural intentions

The TPB has received a huge amount of validation with regard to its ability to predict behaviours across numerous domains, and the interested reader is referred to the meta-analysis by Armitage & Connor (2001). This reanalysis of 185 peer reviewed studies concluded that the TPB model accounts for broadly 39% of variation in behavioural intentions, and 27% of behaviour itself. For some theorists this represents a strong, robust model, whilst others point out that this leaves nearly three quarters of the causation of behaviour unaccounted for (Bennett, 2011).

Figure 13: Theory of Planned Behaviour

Source: http://publichealthnerds.blogspot.co.uk/2011/06/theory-of-planned-behavior.html
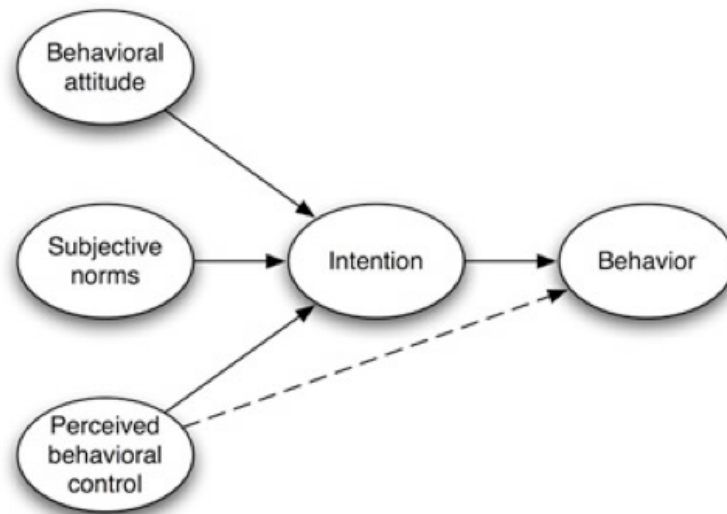
This criticism notwithstanding, the TPB has been successfully applied to various areas of environmental behaviour, including travel-mode choice, household recycling, waste composting, the purchasing of energy-saving light bulbs, use of unbleached paper, water use, meat consumption and general pro-environmental behaviour (cited in Steg & Vlek, 2009).

Direct applications of the TPB to specific biodiversity behaviours are less readily available. One recent example is research conducted at the University of Ghent in Belgium. Roca (2012) applied the TPB to understanding farmers' agro-biodiversity friendly behaviours. The author notes that some research has found the *subjective norm* element of the TPB is only weakly correlated with behaviour. This was indeed reported by Armitage & Connor (2001), who also highlight a generally poor conceptualisation of subjective norms as the most likely explanation. A similar line is taken by Norman, Boer & Seydel (2005) who point out that there are in fact two components of subjective norms: what people are perceived to *approve of (*injunctive norms) and what people actually *do* (descriptive norms). They argue most research focuses only on injunctive measures.

Roca (2012) reflects this discussion in the design of his own research. The study was conducted in the Flemish region of Belgium using a random stratified sample of 106 farmers. Agro-biodiversity friendly behaviour was operationalised within the research as intention to adopt buffer strips and small landscape elements, and to lower fertilisation levels. Advanced multivariate analysis showed that perceived behavioural control, attitudes, and "moral norms" were all significantly related to behavioural intentions. Group descriptive norms, reflecting perceived practices by other farmers, were also significant predictors.

St John, Edwards-Jones & Jones (2010) have made the case for applying social psychological dimensions, such as those included in the TPB, to understanding conservation behaviour. They argue that research has been hampered in the past by focusing too much on broader attitudinal themes that relate at a general level to conservation. They state that, because of this, such studies give little clear direction when it comes to targeting behavioural change at a specific level (e.g. reducing the hunting of a particular species). The authors make reference to the role of subjective norms in driving behaviour, and also emphasise the need to link conservation research to the achievement of specific behavioural outcomes. Finally they also note that a sense of 'moral obligation' is an important precursor to behaviour.

Personal moral norms also emerged in a study by Bamberg & Moser (2007) as an important predictor of pro-environmental behaviour. The authors conducted a meta-analysis of psycho-social determinants of pro-environmental behaviour, building on an original study by Hines, Hungerford & Tomera (1986). Although not explicitly testing the Theory of Planned Behaviour, the authors found that the primary model elements of attitudes and perceived behavioural control were the strongest predictors of behavioural intentions. Intentions themselves mediated all relationships between the psychological constructs and behaviour.

Overall, findings from the research discussed above, which has either explicitly or implicitly explored the Theory of Planned Behaviour in relation to environmental and biodiversity behaviour, provide support for a social-cognitive approach in this area. That is, we can use this model to help understand the triggers of and barriers to engagement with biodiversity.

Specifically the findings suggest the following conclusions:

1. Behaviour stems from specific behavioural intentions. Whereas there will inevitably be a disconnect between intentions and subsequent behaviour, the former is a valid and legitimate focus within biodiversity engagement research.

2. In order to form positive (biodiversity) behavioural intentions, people need to feel that performing the necessary behaviours is within their control. In particular, that means that people need to understand what it is they can actually do to help.

3. The role of norms within determining behavioural intentions is crucial. These norms may concern beliefs about what other people are actually doing, or what they feel other individuals would want them to do. Irrespective, the body of research suggests that this very social element of the TPB is especially pertinent to understanding environmental and biodiversity behaviours.

4. A large amount of the variation in people's behaviour *cannot* be explained by the psychological constructs within the TPB. This may be due in some instances to generalised attitudes etc. being used to predict specific forms of behaviour. The problems of such an approach are outlined within the general *Theory of Correspondence of Specificity* (Davidson & Jaccard, 1979). Alternatively, much behaviour may be deeply habitual, being formed and maintained by various tangible reinforcements: this topic is covered extensively by Darnton et al (2011).

Value-Belief-Norm Theory

The Value-Belief-Norm theory was developed by Stern et al (1999) to explain support for social movements. Specifically they applied their theory in the first instance to support for the 'environmental movement'. The authors propose that support for such movements lies in a conjunction of values, beliefs and personal norms that motivate individuals to act in a way that helps the movement achieve its goals. Generalising from Schwarz's work on human values (e.g. Schwarz, 1992), they argue that a number of conditions must be met for an individual to engage with a social movement.

First, they must accept and internalise the values of the movement itself (for instance, a basic acceptance in the primacy of nature).

Secondly, they must form a belief that things related to those values are under real threat (for instance, that the world's climate is changing, and that this change has a harmful impact on the world). Support for this notion has come from Bamberg & Moser (2007), whose results

indicated that *problem awareness* was an indirect driver of behaviour, and a necessary first step in the route to behaviour change.

Thirdly, they must believe that they have a personal responsibility to act, given that following a certain behavioural path will help diminish the threat. This final condition relates to personal norms, which are defined specifically as "feelings of personal obligation that are linked to self-expectations". In terms of promoting this sense of personal responsibility to act, the authors refer to work by Schwarz and Shuva (1992, cited in Stern et al, 1999) which suggests that such responsibility will be increased when (i) there is an abiding sense of group fate, (ii) there is a belief in the viability of group action as a strategy to avert the perceived threat, and (iii) individuals see themselves as having as much capacity to act as other group members.

The specific type of behaviour that follows from the above three conditions being met will depend upon each individual's capabilities and constraints. Stern et al (1999) conducted a survey of 420 respondents from the general (phone-owning) US population, and found that compared to other extant theories of movement activism, their Value-Belief-Norm theory had the most explanatory power.

Generally within their theory, and in citing the work of Schwarz and Shuva specifically, Stern et al touch closely on the psychological construct of *response efficacy*. This refers to the extent to which an individual believes that performing a given behaviour will lead to the specific desired response. For instance, believing that stopping smoking leads to reduced risk of cancer, or that creating a 'wild area' in your garden will help bees to thrive and pollinate the local fauna. Developed as a corollary to the TPB within the area of health psychology, and also as a key element of Protection Motivation Theory (see for example Rogers, 1975), response efficacy has received widespread support as an important determinant of pro-environmental behaviour. One specific example comes from Huenchuleo, Barkmann & Villalobos (2012). The authors interviewed a random sample of 140 Chilean farmers, to explore the determinants of adoption of a range of soil conservation measures (SCM) in the Scenarto Costero region of central Chile. Testing components of Protection Motivation Theory, Huenchuleo et al found that willingness to pay for implementation of SCM was significantly impacted by the perceived response efficacy of such measures, as well as by levels of community support for the measures.

As well as being applied to environmentalism in general, the Value-Belief-Norm model has been used to understand engagement with biodiversity specifically. Johansson, Rahm & Gyllin (2012) used the model to understand the level of landowners' participation in either wetland restoration or forestry conservation schemes. They interviewed 280 such landowners, and noted that "landowner groups that had participated in the projects tended to be more aware of their consequences, ascribing more responsibility to themselves and expressing personal norms obligating them to participate in local biodiversity". They conclude by recommending that local biodiversity conservation could benefit from addressing the psychological determinants of a sense of moral obligation to act in a pro-biodiversity way.

Related to the general discussion on individual motives such as a sense of personal responsibility, Crompton (2010) discusses the distinction between egoistic and ecocentric motivations. The former are driven by outcomes that are in the self-interest of the individual (e.g. reduce your energy consumption because it will save you money). The latter stem more altruistically from a concern for other living things, and ultimately derive from a greater sense of identification between the individual and environment. Crompton goes on to highlight the implications of this continuum of motivation for behavioural interventions.

We began this section with the claim from Burke et al (2010) that understanding individual level psychological factors is essential in combating environmental threats. The research that has been reviewed above provides a broad overview of the type of psychological dimensions that may act as powerful triggers and barriers to environmentally sustainable, pro-biodiversity behaviour.

Group psychological factors

As the previous discussion has shown, there are numerous ways in which individual psychological factors can act as triggers or barriers to dispositional and behavioural engagement with biodiversity. The frequent emergence of social norms as one such important dimension gives an indication of the social nature of many of these behavioural drivers. Other research has reinforced the importance of social identities and comparisons between the groups we belong to as determinants of environmental behaviours.

Duke (2010) argues that understanding the *social element* may be critically important in promoting the adoption of environmentally sustainable behaviour. Within the framework of a social identification approach to behaviour, Duke's research investigated how various aspects of social group membership interact with individual level attributes (such as those discussed in the previous section) to influence environmental behaviour.

In one of his reported studies Duke found that when an individual (a) strongly identifies with a specific group (in his research a nationality, but results could be extrapolated to audiences or segments such as 'traditional farmers'), and (b) believes that the group endorses specific environmentally sustainable behaviours more strongly than a group s/he does *not* identify with, then (c) behavioural intentions to engage with the behaviour became stronger. So, favourable comparisons of one's own group's behaviour with another group serve to improve one's own behaviour further.

In situations where information for a comparison between groups is not readily available, people may look to assess their behaviour (and form future intentions) based on comparison of their own group's current behaviour with its past behaviour. Duke concludes from his research that "deviation from our own high standards is likely to be concerning and prompt group members to redouble their efforts to live up to these standards, and set restoration of group standards as an implied group goal".

Unfortunately, a redoubling of efforts is not the only response available to a group which has its standards challenged. Qualitative work with UK fishermen (Creative Reseach, 2009) provides a fascinating example of a different dynamic, in which a group seeks to defend its own account of itself in the face of alternative accounts from external sources. Fishermen, the researchers report, "feel that they are largely portrayed as villains":

> They would instead see themselves as 'custodians of the sea', harvesting a valuable food resource and they believe that they have a far greater knowledge and appreciation of the marine environment than anyone else.

The report also provides examples of the social strategy of seeking to defend one's group from the charge of villainy by further subdivision within the group: in this case, the tendency was to blame environmental problems on larger vessels using technologies such as sonar.

Although not as prevalent as research exploring individualistic psychological models in relation to environmental engagement, some other authors have also investigated group level models in this context. Opotow & Brook (2003) found that strong social identification with groups can

exacerbate conflicts over natural resources, and may undermine pro-conservation behaviour. Their research focused on ranchers and environmentalists in relation to ranchland conservation. In reviewing this work Saunders, Brook & Myers (2006) cite evidence that suggests these tensions may be reduced by the creation of a shared identity through collaborative processes, although it is important that creation of this common identity does not threaten the individual group level identities.

When interpreted in conjunction with the research on the role of *norms* in determining behavioural intentions, the evidence above makes it clear that exploring norms and identities at both an individual and group level is crucial to understanding what might facilitate or inhibit specific instances of biodiversity engagement.

Additional factors

Numerous research studies have identified additional factors that influence pro-environmental behaviour generally. Information relating to biodiversity specifically is less prevalent. Such research may have also included psychological constructs, but in the following section we focus on the factors that lie outside the behavioural models we have reviewed above.

Goddard, Dougill & Benton (2012) explored barriers to biodiversity management in residential landscapes, using a random stratified sample in Leeds. They measured pro-biodiversity behaviour in two ways: (i) the number of wildlife-friendly features within a garden (using the wildlife resources index); (ii) the frequency of winter bird feeding. They noted how such behaviour was significantly associated with the effect it had on people's own sense of wellbeing, and also with having a sense of *moral responsibility to nature*. The authors also discussed how social norms emerged as a very strong barrier to uptake of wildlife-friendly activities. Respondents felt that developing more biodiverse landscapes would let down neighbourhood standards. The authors conclude that neighbour mimicry could be an effective approach to diffusion of wildlife friendly practices, and that "community-driven initiatives that engage, educate and empower residents are better placed to encourage wildlife friendly gardening than top-down financial incentives".

The issue of wellbeing was also explored within research by Hobbs & White (2012). The authors investigated motivations and barriers in relation to community participation in a biodiversity recording scheme. They concluded that the major motivating factors for participants in the scheme were: (i) the sense of making a positive personal contribution to conservation (related to response efficacy); (ii) personal benefits in the form of improved health and sense of wellbeing. They also cited more tangible barriers to such participation as a lack of awareness of opportunities and accessibility of the schemes in terms of equipment, facilities and knowledge. Finally, they also noted that people from socio-economically deprived areas were underrepresented in recording schemes at both a local and national level.

Lewis (2009) looked specifically at how urban areas can be used to support biodiversity and create connectivity with other natural areas (so called 'stepping stone' areas). The initial research found three types of barrier to changing landscaping behaviours:

- Logistical, including nurseries not carrying a wide enough range of plants; gardeners and landscape designers without enough training in using native plants; lack of gardening skills in maintaining these types of areas; restrictions in home leases which prevent implementation of these landscapes.

- Behavioural, including a lack of knowledge, skills, time and money amongst homeowners to implement landscapes that support biodiversity.

- Attitudinal, including perceptions that these landscapes are not aesthetically pleasing, attract pests, and create problems because they break social norms.

Moon & Cocklin (2012) explored the motivations and barriers of Australian landholders to participate in biodiversity conservation. They conducted 45 qualitative interviews with landholders who had participated in conservation programmes in Queensland. Their research revealed that participation had depended on the level of formal biodiversity protection afforded by the programme, how property rights might have been affected, personal benefits of participation, and the programme objectives. Common barriers to participation were lost productivity, and limitations to future land use and development. Their research design (and therefore conclusions) would have been stronger had they also interviewed people who had declined to participate in conservations programmes.

Summary of barriers and triggers to biodiversity engagement

Distilling the findings from the previous three sections, Figure 14 summarises 'factors' that have been identified in the research cited as potentially facilitating or inhibiting biodiversity engagement (either dispositional or behavioural). It also clarifies these by offering illustrative examples of ways in which they might be addressed.

Figure 14: Summary of factors driving dispositional and behavioural engagement biodiversity

Factor	Illustrative action to drive engagement
Knowledge of loss of biodiversity	Awareness campaigns focusing on species depletion
Knowledge of impact of loss of biodiversity	Awareness campaigns on negative environmental impact, e.g., loss of bees leads to lack of pollination and lower agricultural yield and potential food shortages
	Awareness campaigns emphasising the financial cost of biodiversity loss
	Activate implicit lay belief that a richness in life is intrinsically valuable
Knowledge of importance of habitat	Increase understanding of the link between certain habitats (e.g. wetlands) and biodiversity
Attitudes – Biodiverse landscapes.....	
"...are not aesthetically appealing"	Examples of aesthetically appealing biodiverse gardens. Potential to sponsor biodiversity areas at high profile shows such as Chelsea Flower Show, and in national gardens such as Kew
"... attract pests"	Education campaigns on the natural value of and role played by so-called pests
"...are less productive (for farmers)"	Challenge assumption (where false)
	Raise awareness of personal (egoistic) benefits of pro-biodiversity

	behaviours, e.g., money saving from reduced energy consumption
Promoting personal wellbeing, health and relaxation etc.	Raise awareness of positive impact pro-biodiversity behaviour has on wellbeing
Group injunctive norms	Challenge and overcome beliefs about disapproval – see sponsorship suggestion above
Group descriptive norms	Raise awareness of local pro-biodiversity behaviour and community schemes where applicable
	Continued promotion of local community level initiatives
Subjective norms	Emphasise general acceptance and approval of pro-biodiversity behaviour, especially amongst "relevant others" (see also "neighbourhood mimicry")
Knowledge of how to help	Provide clear guidance on a (manageable) set of things people could be doing more of (or less of) to safeguard biodiversity. Awareness of indirect actions that safeguard biodiversity through carbon reduction is generally high, so a focus on direct behaviours (e.g., keeping to paths) may be more appropriate
Perceived behavioural control	Clear modeling of behaviours and information resources on how to implement new behaviours (e.g., managing a biodiverse garden)
Response efficacy	Highlight importance of "stepping stone" areas, e.g., a small garden can help species move between larger areas
	Clarify link between small, personal/local actions and global outcomes
	Communicate how an individual's behaviour influences others to create contagion effect – "neighbourhood mimicry"
	Communicate "every little helps"
Professional skills awareness	Improved training to landscape professionals on creating biodiverse areas
Self-identification with nature	Strengthen people's identification with nature through increased opportunity to interact with natural areas
Social identification	Strengthen element of national social identity linking Britain with appreciation of nature, and also leverage other social identities with pro-environment values
Free rider effects	Instill sense of personal responsibility for biodiversity safeguarding
Availability of pro-biodiversity materials	Ensure nurseries stock wide enough ranges of native plants
Social Inclusion	Further exploration of access to biodiversity initiatives in socio-economically deprived areas
Government & Institutional support	Government/institutions lead by example to demonstrate commitment to biodiversity safeguarding

Appendix 2: positive actions

The table below summarises the huge range of suggestions we have encountered in the literature for positive action for biodiversity in the private, public and organisational spheres.

Key sources are: Annett & Spouncer (2004); Defra (2006); Defra (2008); European Commission Directorate-General for the Environment (2011); Gallup Organisation (2010); Hulyer (2007); Natural England (2012b); Thornton (2009).

Domain/context	Action
PRIVATE SPHERE	
Personal transport	Reduce road vehicle green house emissions by walking, riding a bike or sharing transport
	Limit CO_2 emissions during travel (fly less)
	Limit distance travelled by choosing local shopping / leisure venues / schools etc.
	Switch to public transport
	Switch to an electric / hybrid car
	Compensate for CO_2 emissions by financing biodiversity projects
Domestic energy use	Limit consumption of non-renewable energy
	Chose energy efficient appliances
	Insulate your home
	Chose a green energy tariff
Domestic water use	Reduce consumption of drinking water, use rainwater, recover grey (used) water
	Use a water meter
	Turn off the tap at home, shower not bath
Home management	House local fauna in roof space (make provision for birds, bats etc.)
	Install a green roof at home
	Use non polluting household products (avoid phosphates, solvents etc.)
	Reduce consumption of paper and card to protect forests and save energy and reduce waste

Eco-friendly shopping	*Food* • Subscribe to an eco-basket (products from ecological agriculture) • Reduce green house emissions by consuming regional/seasonal items • Chose fair trade produce • Buy responsibly produced fish • Reduce meat consumption / adopt a low impact diet (pastures are created at the expense of woodland etc.)
	Home • Chose home furnishings which are natural, durable, recyclable and ecological, of local origin • Keep portable technology for as long as possible (mining damage occurs to obtain the materials – copper, cobalt, lead) • Limit use of plastics (bags, bottles etc.) to reduce the "Great Pacific Garbage Patch" • Chose recycled paper products (notepads, toilet tissue, bags etc.) • Re-use shopping bags
	Personal • Chose eco-cosmetics • Avoid chemical UV filters by using mineral sun cream (or wear a t-shirt) • Chose eco-cotton • Avoid dry clean only clothing
Waste behaviour	*Limit waste production* • Avoid products with too much packaging • To reduce waste, buy only what you need • Reuse items or pass on to others (e.g. freecycle)
	Waste disposal • Do not throw rubbish on the ground • Return unused medication to the pharmacy for proper disposal
	Recycling • Chose products with recyclable packaging • Recycle papers and cardboard • Recycle plastics • Compost waste food
Garden/land management	Support biodiversity with garden features • pond • flowering field • nest boxes / bat boxes

	• hedgerow • spontaneous vegetation corner • log pile • pile of stones • avoid paving over the garden
	Support biodiversity with gardening behaviours • late mowing • planting for insects • nectar rich planting
	Cultivate biodiversity in the garden • Plant native species • Protect earthworms
	Do not hinder biodiversity • Promote the passage of animals through the neighbourhood (tunnels between your and your neighbours' gardens, plant trees for bridges) • Limit outdoors light pollution (to avoid disturbing nocturnal animals) • Avoid chemical products in the garden (garden organically)
	Conserve drinking water • Use rainwater or grey water to water the plants • Drought resistant planting
	Choices to reduce impact elsewhere • Chose peat free compost • Make your own compost • Garden furniture made from certified wood • Grow your own fruit and vegetables
Leisure and Tourism	Enjoy the natural environment • Visit natural landscapes • Visit green spaces • Walk through green spaces on the way to somewhere else • Enjoy the garden • Looking at scenery from indoors • Watching wildlife • Watch nature programmes, read nature publications, look at nature photos
	Behave Responsibly in the natural environment • Do not disturb animals when out walking • Respect nature when walking (keep to paths, etc.)

	Enjoy nature in the city
	Increase knowledge, learn about different species
	Tourism • Stay in an eco-hotel • Sample local specialities when travelling, refuse dishes from threatened species or traditional remedies with a negative impact on biodiversity • Buy holiday souvenirs responsibly (avoid protected species, illegal products)
PUBLIC SPHERE	
Activist (seeking to influence others)	Encourage the local authority to garden ecologically (use local species, avoid pesticides, reduce watering, compost)
	Lobby for roads adapted to biodiversity (planning, quieter surfaces, recycled materials, lighting, roadside planting and maintenance)
	Seeking to engage and influence others
Non-activist	Support nature-protection associations • Monetary donation (regular or one-off) • Membership • Advocacy • Volunteering labour
	Support a reforestation project
	Be an eco-volunteer • Take part in a conservation project • Go on a project holiday
	Participate in biodiversity day
	Organise neighbourhood cleanups to limit pollution of watercourse and wasteland
ORGANISATIONAL SPHERE	
Actions in the workplace	Promote awareness of biodiversity at your workplace
	Introduce or lobby for eco-eating in the canteen
	Introduce or lobby for recycling
	Use recycled paper products
	Encourage the company to support biodiversity causes, either monetarily or by providing voluntary labour

Appendix 3: existing segmentations

The tables below provide an overview of a number of existing segmentations with potential relevance to biodiversity which have been identified.

Defra Pro-environmental Behaviour Segmentation	
Source	Defra (2006); Defra (2008).
Purpose	The report sets out a framework for Defra's work on pro-environmental behaviour, which aims to protect and improve the environment by increasing both individual and community action. By combining a number of sources of evidence on public understanding, attitudes and behaviours, and motivations, it draws conclusions on the potential for change across a range of behaviour groups. It is designed to support policy development and implementation in Defra, in other Government Departments and externally.
Universe	Context of the report suggests total adult population but does not seem to be explicitly stated. Summary materials imply that total universe size was 41.1m people.
Segment definition	The model is the outcome of a three stage research process (desk research, qualitative research, and quantitative research) alongside wider engagement activities. It is based on people's responses to a broad range of attitudinal questions as part of the Defra attitudes and behaviours survey in 2007 (3,600 respondents). The development of the segmentation used 44 attitudinal variables and checked there was sufficient variation in other variables to make this a model with practical application, such as some key behavioural variables and demographics.
Description	The model divides the public into seven clusters based on their attitudes and beliefs (towards the environment, environmental issues and behaviours). In addition to a detailed segment profile, each segment has a name and 'representative catchphrase'. In addition to their attitudes and beliefs, the report classifies segments in terms of their ability and willingness to act to preserve the environment. The names of the seven segments are: Positive Greens, Waste Watchers, Concerned Consumers, Sideline Supporters, Cautious Participants, Stalled Starters and Honestly Disengaged. This piece of work has a strong focus on emissions and climate change but some themes may be relevant to engagement with biodiversity.

BBC Breathing Places Segmentation	
Source	BBC – detailed materials not publically available. Summary materials shared by interviewees. Originally conducted in 2002.
Purpose	Initially developed to guide marketing of BBC Natural History products globally. Then extended by BBC Learning (same segments) with a view to looking at

	audiences beyond broadcast. Used in Breathing Spaces campaign.
Universe	Details not available. Summary materials imply that total universe size was 29.5m people. While not stated anywhere in the materials found, it appears the universe may be defined by having at least some interest in nature.
Segment definition	Details of the analysis behind this segmentation are not available. Definition of segments appears to have been based on a mix of variables, including environmental attitudes and behaviours and media consumption preferences.
Description	Six segments are identified in summary materials, with a name and 'representative catchphrase'. Each segment is further characterised by 'motivators': note that these appear originally to be have identified as motivators for consumption of BBC content.

RSPB Segmentation	
Source	Materials shared in confidence with research team. Carried out in 2012.
Purpose	To support the RSPB's strategy of increasing public engagement with nature and to guide a wide range of RSPB activities, including campaigning, practical conservation support and donative income generation.
Universe	UK population (16+)
Segment definition	Variables used to define segments include attitudes, behaviours and willingness to change. The segmentation is based on analysis of a 20-minute telephone survey of 3000 people, which built on an earlier qualitative phase of work.
Description	Six segments are identified and characterised by their level of passion, awareness and concern, and typical actions. Segments are profiled in some detail.

National Trust Segmentation	
Source	Materials shared in confidence with research team. Carried out in 2007-9
Purpose	To help the NT match what it offers to the needs of different visitors
Universe	Visitors to NT built and outdoor properties; 'days out' market.
Segment definition	Details of the variables and analysis used to define segments not reviewed. The segmentation is focused on different audience motivations and needs.
Description	Seven segments identified and profiled in considerable detail. NT materials help NT staff to think through implications of the segmentation in practice. Given the purpose of the segmentation (and the diversity of NT properties) relevance to wider biodiversity issues is limited. (At a more general level, the segmentation is an excellent example of a well-designed segmentation with a clear purpose, properly embedded in an organisation's operations.)

Understanding what people want from the natural environment	
Source	Futures Company (2010)
Purpose	To create a preliminary segmentation to inform service delivery, policy and social marketing with the aim of driving engagement with the natural environment. The work was guided by the key project question, defined with Defra and its partners: 'What aspects of people's lives, experiences and attitudes influence their engagement with the natural environment?'
Universe	UK Population aged 16+. Not explicitly stated in report but inferred.
Segment definition	Quantitative analysis was preceded by stakeholder interviews, a literature review (to identify datasets which could be used in the quantitative analysis, and to begin to draw up a list of the key dimensions upon which the segmentation would be created) and a workshop with a wider group of stakeholders to share preliminary findings and prioritise which dimensions to take into the quantitative stage. The segmentation was developed using a hybrid approach, combining the MENE (Monitor of the Natural Environment) dataset with information on people's attitudes and behaviours, drawn from The Futures Company's Planning for Consumer Change (PCC) survey. Cluster analysis used information from both PCC and the MENE surveys connected by 'hook' variables to shape and refine the segments. However, whilst the segmentation is grounded in the understanding from the two surveys, it is now operationalised using a shorter set of demographic and behavioural variables in the MENE survey.
Description	Eight segments identified, characterised by their level of engagement with the natural environment. The segments also each fall into one of three broad age ranges. Each segment has a name and a one-sentence descriptor. The segment names are: **Younger: 16-34 years old:** Good for the kids and me, Friends and sport, Locally limited **Middle: 34-54 years old:** Pressured but engaged, Competing interests, Reluctant and uninspired **Older: 55+ years old:** Mature explorers, Nostalgic inactives

Carer/doer segmentation	
Source	IAS SMARTS (2006)
Purpose	Three target audience groups identified for the development of a communications strategy to raise public awareness, knowledge and appreciation of Scotland's natural heritage and component themes of biodiversity, landscapes and special places for nature.
Universe	Scotland general public adult population.
Segment definition	Respondents were allocated to a very simple cluster structure, according to their response to two questions that established the level of importance they attribute to the natural landscape and living things in their daily life, and their

	level of involvement in natural heritage or outdoors organisations.
Description	Three clusters are established: Carers and Doers, Carers and Non-doers and Non-carers.

Farmers	
Source	Pike (2008).
Purpose	The discussion paper summarises existing evidence relating farmers and land managers from the previous three years in order to suggest how the thinking can be applied to agricultural change and the environment. Part of this discussion is the analysis of two pieces of work on the classification of farmers. A single framework is built from these, relating mostly to individual farming decision makers, to be used as the basis for policy modelling with respect to recognising diversity in terms of attitudes, motivations and likely behaviours, plus developing relevant communication.
Universe	UK farmers (individual decision makers, rather than organisations)
Segment definition	Pike uses 'farming style' (social, economic, ecological and technological practices that underpin decision-making) as the basis for classifying farmers. Study One, by the University of Reading – *Research to Understand and Model the Behaviour and Motivations of Farmers in Responding to Policy Changes*, comprised a review of international academic literature, plus an ad hoc survey of 683 farm holdings, which focused on the response to a specific government policy. Using the Theory of Planned Behaviour during analysis, factors were formed from 25 objective and 26 value statements and the grouping of responses categorised respondents into 5 farmer types: family orientation; business/entrepreneur; enthusiast/hobbyist; lifestyler and independent/small. There were limitations to this work, being focused on a specific policy issue, which related to only some sections of farming, and being conducted using a self completion method, so a second study was commissioned to build on these findings to produce a more robust model. Study Two, by Continental Research, was substantiated by in-depth qualitative work and a focus on communication. A telephone survey of 750 farmers used 17 statements from the University of Reading research to assign respondents to segments. In a similar way to the first study, variables from the statements were input into factors, from environmental issues to technology, and these were used as a basis for the segments.
Description	Five segments were identified and profiled. The names are custodians; lifestyle choice; pragmatists; modern family business; challenged enterprises. These segments were similar when profiled by size, region and farm type but major differences emerged when attitudes were included. In the report, each has a 'key communication message' and 'in their own words' summary.

Fishermen	
Source	Creative Research (2009)
Purpose	To inform Defra's long term strategy for the fishing industry and help it to develop effective policies and services, and enable it to communicate more effectively with the fishing community. Research was commissioned to build a "rich and detailed understanding of fishermen registered in England, to identify and define a range of 'types' of fishermen based on their needs, motivations, attitudes and behaviours, and to put forward a possible segmentation."
Universe	English fishermen. Over half of the sessions comprised fishermen from a cross-section of the Inshore fleet. The other sessions were conducted among members of the Over 10 metre fleet including Sector fishermen and Non-sector fishermen.
Segment definition	Qualitative research was conducted. 21 two hour sessions took place, involving 142 fishermen. The research found that "at one level, all the fishermen […] were very similar and shared many values and attitudes; at the same time, they are extremely individualistic and highly fragmented as an industry". This made it difficult to develop typologies. However, the researchers found that there was a dimension along which it was possible to place fishermen, relating to how they are responding to the uncertain future of the fishing industry.
Description	A qualitative, broad brush working hypothesis of three types has been developed in the form of descriptions or pen portraits. The groups are Leaders, Lieutenants, and Followers. The dimensions along which the fishermen are segmented does not have a great deal of relevance for engaging with biodiversity, however the research overall made worthwhile points regarding fishermen's attitude to caring for the marine environment.

Appendix 4: qualitative methodology

Stage 1: exploratory interviews

An initial round of 12 'discovery interviews', lasting approximately 45 minutes and conducted by telephone, was undertaken with members of the public in three locations:

Rural	Herefordshire
Urban	London
Peri-urban	Sheffield outskirts

'Discovery interviews' are loosely structured interviews which engage participants in exploring their experience in their own terms. The primary focus for the researcher is on understanding the concepts and language used by participants, as the basis for developing qualitative exercises which will feel meaningful and natural to participants in subsequent phases of research.

Participants were split evenly by gender, and spread evenly across the 20-65 age range. In order to exclude those with no interest in nature and wildlife (who would have had little to say in the interview), three questions from the MENE survey were used as screeners:

- Having open green spaces close to where I live is important

- There are many natural places I may never visit but I am glad they exist

- Spending time out of doors (including my own garden) is an important part of my life

Although these statements do not explicitly mention wildlife or living creatures, we judged they would ensure we were talking to people with something useful to say in the interview. Because they are taken from MENE, meaning data is available for public responses to these items, we also knew we were reaching a large segment of the population.

Stage 2: workshops

Nine two-hour workshops were carried out in the same three locations, each with up to eight participants. A total of 62 participants took part. The workshops were divided into two phases:

Phase 1	Six workshops with participants from Tiers 3 and 4
Phase 2	Three workshops with participants from Tier 1

There was a break between the two phases, and findings from the Phase 1 workshops were drawn on in the design of the Phase 2 workshops.

We were keen to focus the qualitative work on a manageable section of the population, and also to ensure we were gaining insights into people for whom engagement in biodiversity issues is a realistic possibility. Interviews with stakeholders and our own exploratory interviews had suggested that lifestage can be an important factor, with having children, growing older and retirement being possible 'engagement cues'. The qualitative sample was therefore focused on two groups:

Parents	Ages 25-40
	All with children under 10 with whom they spent time outdoors
	Some with first child under 5

Older   Ages 50-70 (but active)
                   Some with grandchildren under 10 with whom they spent time outdoors
                   Some retired

Figure 15 below provides an overview of recruitment for the nine workshops.

Figure 15: Qualitative workshops

Location	Profile	Rural	Urban	Peri-urban
Phase 1: Tiers 3 and 4	Older (50-70), some with grandchildren, some retired	A1	B1	C1
	Parents (25-40), all with children under 10	A2	B2	C2
Phase 2: Tier 1	Mix of above profiles	A3	B3	C3

Phase 1 workshops

Findings from the exploratory interviews guided design of the workshops. Prior to Phase 1, an informal pilot was also conducted (responses from participants in the pilot are *not* included in this report, and were used only to refine the workshop design). Some key features of the final design were as follows:

- Conversations were anchored by asking participants to identify, as pre-work, a "natural place which you enjoy spending time in and value for whatever reason". These places provided a concrete starting point for what otherwise might have been a rather abstract conversation.

- Prompt statements (see Figure 16) were used as a way of introducing and encouraging participants to think about the relationships between humans and natural places, between living things and natural places, and between humans and living things. The exploratory interviews had shown that many important topics were unlikely to come up unless prompted, but that if appropriately prompted participants would engage.

- The word biodiversity was not introduced until the very end of the workshop, although the concept of variety did appear in the statements.

The high-level flow of Phase 1 workshops was as follows:

1. Review of the natural places identified by participants. Discussion: what makes these places 'natural'?
2. Discussion of things which can have a positive or negative impact on natural places.
3. Review and response to five statements on the relationship between people and natural places.
4. Brainstorm exercise to ensure full range of living things is being considered. Discussion of the role played by living things in natural places.
5. Review and response to five statements on the relationship between living things and natural places.
6. Review and response to five statements on the relationship between living things and humans.

Figure 16 sets out the statements used as prompts for discussion in the workshop. Note that the exercises with these statements do *not* constitute 'testing' of these statements, which are not in any way intended as communication messages.

Figure 16: Statements used in Phase 1 workshops

Relationship between people and natural places	
A	We should preserve natural places, and stop them from being changed
B	We should manage natural places so we can meet our own needs without damaging them
C	We should learn from natural places, and adopt more natural ways of living ourselves
D	We should take what we need from natural places, and let nature look after itself
E	We should not interfere with natural places at all
Relationship between living things and natural places	
H	Every species has a different job to do in keeping a natural place functioning properly. Problems arise if one of these jobs is not being done.
J	Every species belongs in the places where it is naturally found. Problems arise when living things are introduced into places where they don't really belong.
K	Every species depends on all the other species in a natural place in a chain of life. Problems arise when the links in that chain are broken.
L	Every species competes with all the others in a natural place, and keeps them in check. Problems arise when a species becomes too dominant and the system becomes unbalanced.
M	Every species contributes something unique to the diversity of life in a natural place. Problems arise when this natural variation is reduced or lost.
Relationship between living things and humans	
V	We have a duty to protect the living things in nature. It would be morally wrong to let too many species die out.
W	Living things are useful to us in all sorts of ways, many still undiscovered. If we let too many species die out, we will regret it.
X	We depend on the living things in nature to stay alive ourselves. If we let too many species die out, our species will suffer.
Y	The world is more interesting because of all the living things in it. If we let too many species die out, it will be a real shame.
Z	We are living things ourselves, just one part of nature among many. If we let too many species die out, we will lose our way in the world.

Phase 2 workshops

Analysis of Phase 1 workshops revealed a number of apparent points of debate or tension (the analytical forerunners of the various stories discussed in Chapter 3 of this report). We were

keen to explore these in more detail. So in Phase 2, review and discussion of statements was replaced with a continuum exercise, in which participants are asked first to position themselves on a continuum of agreement between views, then discuss their reasons for taking these positions with each other. Figure 17 presents the three continua used in the workshops.

As Phase 2 workshops were with indididuals from Tier 1 – people who are not aware that biodiversity is declining in the UK or globally – we were also keen to explore the responses of participants to information on this point. Prompt statements (see Figure 18) were used to introduce new information. Note that this exercise does *not* constitute 'testing' of these statements, which are not in any way intended as communication messages.

The high-level flow of Phase 2 workshops was as follows:

1. Review of the natural places identified by participants. Discussion: what makes these places 'natural'?
2. Discussion of things which can have a positive or negative impact on natural places.
3. Brainstorm exercise to ensure full range of living things is being considered. Discussion of the role played by living things in natural places.
4. Continuum exercise.
5. Review and response to statements presenting new information.

Figure 17: Continua used in Phase 2 workshops

Human activity can cause real damage to nature. But nature always finds a way to adapt and recover. It was there before us, and will be there long after we have gone.	Human activity can cause real damage to nature. We are taking too much too fast, and nature cannot keep up. The damage we are doing is permanent.
The way we live today is not sustainable. We need to go back to simpler ways of living, that allow us to meet our real needs while being more in tune with nature.	The way we live today is not sustainable. We need to develop new technologies, which allow us to maintain our modern lifestyle while causing less damage to nature.
I love spending time in natural places. For me, getting out into nature is an escape from the stresses of everyday life. It helps me recharge my batteries, so I can get on with all the other things I have to do.	I love spending time in natural places. For me, getting back to nature is a way of gaining some perspective on my life. It helps me reconnect with the things that really matter and refocus the rest of my life.

Figure 18: Statements used in Phase 2 workshops

1	There is clear evidence that the variety of living things on earth – including all species of animals and plants – is decreasing. It is decreasing worldwide and in the UK, and will continue to decrease in the future.
2	The UN estimates that human activities are causing the extinction of plants and animals at some hundreds or thousands of times faster than what the natural rate would have been. Globally, it is believed that 1 out of 8 bird species are at risk of extinction, 1 out of 4 mammal species, 1 out of 4 conifers, and 1 out of 3 amphibians.
3	There is clear evidence that human activity is disrupting the natural processes that provide us with clean water and air, keep our soil fertile, ensure our crops grow, and make life on the planet possible. However, a majority of people do not understand how

	these natural processes work or the extent to which human life depends on them.
4	Children are spending less and less time in natural environments. For instance, a 2009 report for Natural England showed that only 10% of children now experience woodland play, as opposed to 40% of their parents' generation. According to a National Trust spokesperson, more children go to hospital having fallen out of bed than having fallen out of a tree.

Stage 3: small groups

In addition to workshops, three small group discussions were carried out with individuals actively involved (in a voluntary capacity) in managing or improving local places.

> The Friends of Walkers Heath Park, Birmingham

> The Friends of the Riverside Park, Stony Stratford, London

> The First Avenue Urban Wilderness Community Garden, Plaistow, London

A total of 13 participants took part in these small groups.

The design of these workshops was modelled on the design of the Phase 2 workshops. The fact that only four/five participants were engaged in each small group created room to discuss flexibly the specific issues facing each group.

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