

Biodiversity 2020: developing indicators for measuring success

Summary of responses to technical discussion paper

May 2012

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1. Background

- 1.1 In 2011, the government published [Biodiversity 2020: a strategy for England's wildlife and ecosystem services](#). This new, ambitious biodiversity strategy for England builds on the Natural Environment White Paper (NEWP) and provides a comprehensive picture of how we are implementing our international and EU commitments. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea. It builds on the successful work that has gone before, but also seeks to deliver a real step change.
- 1.2 *Biodiversity 2020* also outlines plans to develop and publish a compact set of indicators to assess progress with delivery of the strategy. They are to be outcome-focused with an emphasis on state indicators aligned to the strategy outcomes, and with additional response and pressure indicators to show progress with the priority actions set out in the strategy.
- 1.3 Defra published the previous England Biodiversity Indicators annually between 2003 and 2011¹. These indicators were reviewed in 2010 to ensure that they were based on the best available data sources and reduced to a compact set of 26 robust indicators. The new Strategy marks a change in direction for biodiversity policy and addresses wider challenges set by the Convention on Biological Diversity (CBD) and so a reconsideration of indicators is appropriate. However, it is likely that many of the current indicators will remain relevant, especially where they provide information on status of wildlife or the pressures on the natural environment.
- 1.4 In addition to reflecting new CBD commitments, we will need to align the indicators with indicator frameworks being developed at the UK², European³ and global levels so that reports on progress in England towards international commitments can contribute to these international processes and place the least burden on data suppliers.

2. Informal consultation on the indicator set

- 2.1 In August 2011, Defra issued a [technical discussion paper](#) outlining options for developing a set of revised indicators to track progress with *Biodiversity 2020*. The paper set out options for a revised set of biodiversity indicators covering 17 topics, building on the existing indicators, aligned to the UK indicator framework and addressing the outcomes in *Biodiversity 2020* and the CBD targets⁴. The paper invited stakeholders to identify potential data sources and preferred options for developing indicators.
- 2.2 In November 2011, Defra and Natural England hosted a stakeholder workshop in London. A range of experts from organisations in the statutory, NGO and academic sectors were invited to the workshop to discuss and provide advice on new topics proposed in the technical discussion paper.

¹ Latest update: www.defra.gov.uk/statistics/environment/biodiversity/england-biodiversity-indicators/

² In the UK, the Marine Strategy Framework Directive (MSFD) [//www.defra.gov.uk/environment/marine/msfd/](http://www.defra.gov.uk/environment/marine/msfd/) will require a set of indicators. It is likely that any indicators developed for the MSFD would be integrated into the new Strategy indicator set. Similarly, it is likely that UK and country indicators will be developed for reporting on the Water Framework Directive www.defra.gov.uk/environment/quality/water/water-quality/ and these too could be integrated into the new Strategy indicators.

³ Indicators will be required for the new European Biodiversity Strategy [//ec.europa.eu/environment/nature/index_en.htm](http://ec.europa.eu/environment/nature/index_en.htm)

⁴ The UK Government is a signatory to the United Nations Convention on Biological Diversity (CBD) and is committed to the new biodiversity goals and targets 'the Aichi targets' agreed in 2011 and set out in the [CBD Strategic Plan for Biodiversity 2011-2020](#). The targets are known as 'Aichi' targets, after the province in Japan where they were agreed.

3. Responses to the informal consultation

- 3.1 Thirty-six written responses to the technical discussion paper were received from a range of organisations including local record centres, local authorities, universities, businesses, statutory agencies, biodiversity partnerships and NGOs (listed in Annex 1). Eighteen organisations also attended the stakeholder workshop held by Natural England and Defra (listed in Annex 2).
- 3.2 The review and feedback from stakeholders identified a small number of gaps where there were no indicators for particular outcomes or actions in the strategy, or where the existing indicators were only indirectly linked to CBD targets. A number of further refinements to indicators were also identified to improve their relevance, make them easier to understand, or to address concerns over data quality or availability.
- 3.3 Key points made by consultees were as follows:
- a. No new indicator topics were proposed by consultees.
 - b. Proposals to refine and augment the existing indicators, rather than replace them with a completely new set were generally supported by consultees.
 - c. Indicators should reflect, at least in part, the outcomes in *Biodiversity 2020*.
 - d. Indicators for marine biodiversity were under-represented.
 - e. No well-developed options were identified by consultees for indicator topics covering 'innovative financial measures', 'sustainable consumption' and 'valuation and accounting for biodiversity'.
 - f. A number of respondents felt that the number of local sites in positive management was not the best indicator for the topic on integrating biodiversity considerations into local decision making, and asked Defra to consider options that looked at how data were used by Local Authorities.
 - g. Consultees identified potential overlaps between indicator topics on 'awareness/ understanding' and 'taking personal action.' (This was echoed at the workshop which concluded that the focus should be on taking action for biodiversity, rather than simply knowing about the term 'biodiversity').
 - h. A number of respondents felt that the indicator topic on 'pressures on biodiversity' should be expanded given its high profile in the Strategy. (This view was echoed at the workshop).
 - i. A number of respondents felt that the indicator topic on 'biodiversity and ecosystem services' should be expanded and focus on trends in species groups/habitats explicitly linked to ecosystem services such as carbon sequestration, pollination, water quality and public enjoyment rather than on attempts to measure the services directly. (This view was echoed at the workshop).
 - j. A number of respondents felt that indicators on both threatened species and species of the wider countryside could be improved if they had a wider taxonomic scope or if they made better use of existing data. (A number of respondents also commented that improving monitoring and surveillance – i.e. the collection of data – would increase the quantity and quality of data used in the indicators.)
- 3.4 A summary of responses to the discussion paper and stakeholder workshop is provided in Annex 3. A summary of outcomes from the workshop is provided in Annex 4.

4. Changes made to the indicator set as a result of responses to the informal consultation

- 4.1 Following the informal consultation, the 17 proposed topics have been expanded to a set of 24 interim indicators for *Biodiversity 2020* (see Table 1). Key changes are:
- a. A greater emphasis on marine biodiversity, for example by splitting the protected sites indicator to show area protected on land and at sea.
 - b. A revised format for indicators on changes to the status of species in the wider countryside so that they are split by habitat type. This will allow for data from a wider range of species groups to be added over time.
 - c. A change to indicators on how the public values biodiversity, making better use of new data from the England-wide survey 'Monitor of Engagement with the Natural Environment' (MENE).
 - d. A change to proposals for an indicator on *integrating biodiversity into local decision making*. The indicator proposed in the technical discussion paper *Number of local sites under positive management* has been retained in the set but is now included as a measure within the protected sites indicator. Options for *integrating biodiversity into local decision making* will be further reviewed with stakeholders over the next two years.
 - e. Defra will support work to further develop indicators for new priorities introduced by *Biodiversity 2020* for example on how society benefits from biodiversity through the provision of ecosystem services and on how biodiversity is taken into account in decision making. The topic on '*Ecosystem services*', which was considered to be under represented by stakeholders, has been split into four separate indicators (provisionally on public enjoyment, genetic resources for food and agriculture and two further indicators on natural resources management, provisionally identified as one based on species and one based on habitat).
- 4.2 Three indicator topics included in the discussion paper have been removed from the interim indicator set:
- a. Innovative financial mechanisms;
 - b. Valuation and accounting for biodiversity;
 - c. Integration of biodiversity into the business sector.
- No suitable options for developing indicators in these areas were identified during the consultation, although the latter two are still under consideration as UK indicators.
- 4.3 For four further indicator topics, UK-level indicators are available or being developed and it provides no added-value or is not possible yet to produce a breakdown for England:
- a. Global biodiversity impacts of UK economic activity/ sustainable consumption;
 - b. Integration of biodiversity into the fisheries sector;
 - c. Status of habitats and species providing essential services - marine fisheries;
 - d. Genetic resources for food and agriculture.

We therefore do not propose developing England-specific indicators for these topics but, because of their relevance to the Strategy⁵, have included the four UK-level indicators in the England set.

5. Plans for publication of indicators in 2012

- 5.1 A new set of 24 interim indicators for assessing progress with *Biodiversity 2020: the strategy for England's wildlife and ecosystem services* will be published on the 29th May 2012⁶ (see Table 1 overleaf). The indicators are grouped around the four central themes of the strategy and will provide much of the evidence base for assessing progress with the *Biodiversity 2020* outcomes.
- 5.2 A note on their development status is also provided. Of the interim indicators identified:
- Ten are sufficiently developed to be published in full in May 2012 (green⁷);
 - Nine will be published with interim data and methods to allow an assessment but with some further development work required (amber); and
 - Five will be described but will not have data available in 2012 (red).
- 5.3 Further refinement to the indicator set will also be needed to reflect changes in data availability and further developments in marine, European and international indicator frameworks (see sections below).

⁵ Outcome 2 for marine fisheries and priority actions 1.4 for agricultural genetic diversity and 2.3 for sustainable consumption.

⁶ <http://www.defra.gov.uk/evidence/statistics/environment/index.htm>

⁷ Colour coding has been used to indicate the publishable status of the indicator, not the assessment of the indicator.

Table 1. *Biodiversity 2020* indicators

Strategy Themes	No	<i>Biodiversity 2020</i> indicator	Development status	Strategy headline outcomes ⁸
1. A more integrated, large-scale approach to conservation on land and at sea	1	Extent and condition of protected and local sites	Available to publish	1, 2
	2	Extent and condition of priority habitats	Under development: interim data available	1, 2
	3	Habitat connectivity in wider countryside	Under development: interim data available	1
	4	Status of priority species	Under development: interim data available	3
	5	Species in the wider countryside: farmland	Available to publish	1, 3
	6	Species in the wider countryside: woodland	Available to publish	1, 3
	7	Species in the wider countryside: wetlands	Available to publish	1, 3
	8	Species in the wider marine environment	Available to publish	2, 3
	9	Biodiversity and ecosystem services: (provisionally terrestrial habitats)	Under development: no interim data	1
	10	Biodiversity and ecosystem services: (provisionally species)	Under development: no interim data	1, 3
	11	Biodiversity and ecosystem services: marine (fish size class)	Available to publish	2
	12	Genetic resources for food and agriculture	Under development: interim data available	3
2. Putting people at the heart of biodiversity policy	13	Public enjoyment of the natural environment	Under development: interim data available	4
	14	Taking action for the natural environment	Under development: interim data available	4
	15	Funding for biodiversity in England	Available to publish	-
	16	Integrating biodiversity considerations into local decision making	Under development: no interim data	4
	17	Global impacts of UK consumption	Under development: no interim data	1, 2
3. Reducing environmental pressures	18	Climate change impacts and adaptation	Under development: interim data available	1, 2, 3
	19	Trends in pressures on biodiversity: pollution	Available to publish	1, 2
	20	Trends in pressures on biodiversity: invasive species	Under development: interim data available	1, 2
	21	Trends in pressures on biodiversity: water quality	Under development: interim data available	1
	22	Agricultural and forest area under environmental management schemes	Available to publish	1
	23	Sustainable fisheries	Available to publish	2
4. Improving knowledge	24	Biodiversity data and information for decision making	Under development: no interim data	-

⁸ 1 = habitats and ecosystems; 2 = marine; 3 = threatened species; 4 = people

6. Plans for developing the indicator set

- 6.1 The indicator set for *Biodiversity 2020* will be published annually. The publication schedule for the indicators will be made available on the Defra website.
- 6.2 Over the next two years, the indicators will be developed with the aim, as far as is possible, of publishing the full set by 2014, in order to contribute to the UK's international reporting requirements. The following are the main areas for development, and work is underway to identify suitable data sources and indicator methodologies (data availability may be limiting in some cases):
- Species of the wider countryside (indicators 5, 6, 7, 8) - to identify options for including a wider range of taxonomic groups;
 - Habitat connectivity (indicator 3) – to identify potential alternative or additional options that are simpler to communicate;
 - Genetic diversity (indicator 12) - to better address plant genetic diversity;
 - Biodiversity and ecosystem services (indicators 9,10) – to develop new indicators for habitats/species providing ecosystem services;
 - Climate change impacts and adaptation (indicator 18) – to review data and propose options for development;
 - Awareness, understanding and support for biodiversity conservation (indicator 13);
 - Water quality (indicator 21) - to align with Water Framework Directive reporting requirements;
 - Invasive species (indicator 21) – to identify potential options for indicating the success in preventing invasive species from establishing
 - Global biodiversity impacts of UK economic activity/sustainable consumption (indicator 17).
- 6.3 In addition to the above developments to the indicators, a series of follow-up actions to address stakeholder comments have been identified:
- Further consultation with Defra and partners to identify options for an indicator on integrating biodiversity considerations into local decision making without placing burdens on local authorities. Natural England will advise on how this can be taken forward.
 - Further work by Natural England to identify options for reporting on the status of priority habitats in the short and long-term.
 - Further consultation on reporting the status of priority species. A working group involving the Government, statutory agencies and the NGO sector has been established ('the Species Indicator Initiative') to develop new indicator on species status for threatened species and for species of the wider countryside.

ANNEX 1. List of organisations who responded to the technical discussion document

Organisation

Association of Local Environmental Record Centres (ALERC)
Bat Conservation Trust
Bedfordshire & Luton Biodiversity Recording & Monitoring Centre
British Dragonfly Society
Buglife
Conchological Society of Great Britain & Ireland
Cumbria Biodiversity Data Centre
English National Park Authorities Association
Highways Agency
Institute of Ecology and Environmental Management (IEEM)
Kent & Medway Biological Records Centre
Leicestershire County Council
Lincolnshire Biodiversity Partnership
National Association for AONBs
National Federation for Biological Recording
Natural England
National Biodiversity Network Trust
Rare Breeds International
Rare Breeds Survival Trust
Royal Society for the Protection of Birds (RSPB)
School of Biosciences, University of Birmingham
Seafish
Shellfish Association of Great Britain
Somerset Biodiversity Partnership
Somerset County Council
South West Water
Thames Valley Environmental Records Centre
UK Farm Animal Genetic Resources Committee
Wildlife and Countryside Link
Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire
Woodland Trust
Yorkshire Water

ANNEX 2. Organisations attending the Biodiversity 2020 Indicator Workshop, 7th November 2011

Organisation

AEA-Technology
Association of Local Environmental Records Centres
Bat Conservation Trust
Birmingham University
British Trust for Ornithology
Buglife
Butterfly Conservation
Centre for Ecology & Hydrology
Defra
Environment Agency
Joint Nature Conservation Committee
Mammal Society
National Farmers Union
Natural England
Oxford University
Royal Society for the Protection of Birds
Woodland Trust
World Conservation Monitoring Centre

ANNEX 3. Summary of responses to discussion paper and stakeholder workshop

When *Biodiversity 2020* was published in August 2011, Defra also issued a technical discussion paper on indicators. In the paper and at a subsequent workshop, stakeholders were asked to identify key gaps, issues and risks and to identify preferred options for developing indicators. The main responses from stakeholders are set out below:

Summary of responses
<p>General</p> <p>No new indicator topics were proposed by respondents. The proposal to refine and augment the existing indicators, rather than replace them with a completely new set, were generally supported by respondents, provided that they were developed to reflect the outcomes in Biodiversity 2020. Some expressed the need to have indicators which are more meaningful for non-conservationists, in order to engage people more widely with the Strategy objectives/Aichi targets.</p> <p>Indicators are not required for all areas. No obvious options were identified by respondents for indicator topics covering ‘innovative financial measures’, ‘sustainable consumption’ and ‘valuation and accounting for biodiversity’. Respondents generally listed these topic areas as a low priority for development.</p> <p>There was a wide recognition from respondents that the underlying data for a broad spread of indicators are collected by professionals and expert amateurs and often by Non-Governmental Organisations. The indicator set proposed will be dependent upon these data streams and continued support for monitoring and surveillance programmes would be needed.</p> <p>Some respondents highlighted the need to distinguish between those indicators which only show direction of travel (e.g. awareness, understanding and support) and those that are specific enough to be able to determine if a target or outcome has been achieved (e.g. extent of priority habitat).</p> <p>A number of respondents indicated that greater use could be made of data from Local Record Centres (LRCs) across a range of indicator topics.</p>
<p>Indicator topics</p> <p>1. Priority habitats</p> <p>Habitat inventories were seen as too inaccurate to be based for a reliable indicator (e.g. variable quality and not available for all habitats). Different habitat classifications and survey methods were also highlighted as being used in different parts of the country, and that there is also significant variation in the amount of monitoring. It was highlighted by a number of respondents that LRCs hold extensive habitat data but it is not regular enough to be considered up to date. There is a need for support for ongoing regular updates.</p> <p>Respondents pointed out that the best source of information on priority habitats condition was from Sites of Special Scientific Interest (SSSIs) but that this would not cover land outside protected sites. It was suggested to promote a “condition standard” for priority habitats whether statutorily designated or not. Priority habitat in agri-environment schemes is likely to be the best measure for assessing land under restoration management.</p>

Summary of responses
<p>1. Priority habitats (continued)</p> <p>A number of respondents suggested that an indicator of the balance of losses and gains might be a realistic option. However, there is currently no accurate or consistent recording of the loss of most priority habitats. There will be opportunities provided by the establishment of reporting mechanisms for Nature Improvement Areas and Local Nature Partnerships. These should establish systems that could work more widely, e.g. for recording the increase in area of priority habitats towards the 200,000 ha expansion outcome.</p>
<p>2. Protected sites</p> <p>An indicator on protected sites need to show marine sites separately and incorporate data on Marine Protection Areas and new marine designations. Also there is a need to further refine the existing indicator to include condition data from marine site monitoring, as details become available.</p> <p>A number of respondents highlighted the need to include the measure used for indicator 11, “the number of Local Wildlife Sites in positive management” within this indicator.</p>
<p>3. Habitat connectivity.</p> <p>Respondents felt that the current indicator is not easily understood or communicated and more needs to be done to examine habitat connectivity at a range of scales. Key challenge is to secure alternative sources of land cover data to enable a fuller application of the existing index, and to better understand the ecological significance of the existing index. A number of respondents suggested structural measures based on protected sites (including local sites) or habitat inventories, but data quality is likely to be an issue. A number of respondents felt that using distribution data of selected species that require high degrees of connectivity may be more communicable and enables a direct link to the actual function rather than current theoretical indicators.</p>
<p>4. Priority species and 5. Selected widespread species.</p> <p>A number of respondents felt that indicators on both threatened species and species of the wider countryside could be improved if they had a wider taxonomic scope or if they made better use of existing data (e.g. terrestrial invertebrates might be a good example to explore). A number of respondents also commented that improving monitoring and surveillance – i.e. the collection of data – would increase the quantity and quality of data used in the indicators.</p> <p>Respondents commented that more use could be made of Local Record Centre data.</p> <p>Some respondents favoured developing new indicators based on changes for a representative sample of priority species for which reliable data showing change in distribution and/or abundance over time are available (from structured surveillance). This information might be both quantitative and qualitative, and indices could be constructed using either approach. Another alternative would be to produce composite indicators combining data for different taxa (needs exploration and development).</p>
<p>6. Ecosystem services</p> <p>A number of respondents agreed that the indicator topic on ‘biodiversity and ecosystem services’ should be expanded and focus on trends in species groups/habitats explicitly linked to ecosystem services such as carbon sequestration, pollination, water quality and public enjoyment rather than on attempts to measure the services directly. The outputs from the workshop identified key benefits from biodiversity: food security; natural resource management; soils and carbon; and public enjoyment.</p> <p>Also, the link between the habitats and species and the services they provide must be made more explicit.</p>

Summary of responses
<p>7. Genetic diversity</p> <p>Concern was expressed about the complexity of the current livestock breeds index. The indicator also needs to better reflect genetic diversity in crop-wild-relatives and/or land races. It is important to subdivide animals and plants. The proposed monitoring system by the Farm Animal Genetic Resources Committee would enable regular, efficient reporting on the status of farm animal genetic diversity across all principle UK farm animal species.</p>
<p>8. Awareness and 9. taking action</p> <p>Consultees identified potential overlaps between indicator topics on ‘awareness / understanding’ and ‘taking personal action.’ The difference between attitude and behaviour has not been clearly defined to the extent that it might be more practical to combine them into one indicator. This was echoed at the workshop which concluded that the focus should be on taking action for biodiversity, rather than simply knowing about the term ‘biodiversity’.</p> <p>A number of respondents questioned the suitability of using the Public Attitude Surveys on ‘Attitudes and Behaviours towards the Environment’ for a reliable and meaningful indicator (baselines are too small for a true evaluation of the whole population). However, some respondents recommended building upon and refining this survey, for example to ask whether people are: concerned by habitat loss and species declines, keen to know what they can do to help, are supportive of local and national Government taking action</p> <p>An indicator on environmental volunteering should continue (not just conservation) but we should widen the number of different environmental NGOs who submit data to this measure. There is also an issue in the data gathering around defining who or what constitutes as volunteering.</p> <p>The CBD ‘Aichi’ targets refer to the steps people can take to conserve nature, of which volunteering is one, but there are many other possible steps. Responses recommended this indicator be expanded to include other elements of action, for example giving and campaigning.</p>
<p>10. Valuation and accounting</p> <p>Few responses were received about this indicator. The main recommendation was to await the findings of the National Capital Committee on exploring quantification of natural capital.</p>
<p>11. Local decision making.</p> <p>The majority of respondents felt that the number of local sites in positive management was not the best indicator for the topic on integrating biodiversity considerations into local decision making. The Single Data List 160-00 currently used would be more relevant to indicators 1 & 2.</p> <p>Respondents felt that an indicator might be developed to show how Local Authorities used biodiversity data such as in planning application screening or assessing local and neighbourhood plans. Specific suggestions included the proportion of planning applications screened against all available local biological data; land-use changes as a result of planning applications or the way biodiversity has been addressed within planning applications (this could also inform LAs about habitat change); the number of objections to planning applications citing biodiversity/wildlife as a reason and the number of neighbourhood plans which undertake an environmental assessment before producing a plan. Overwhelmingly all other responses that addressed this indicator suggested similar measures of that effect.</p> <p>There was a lot of overlap in responses between this indicator on ‘local decision making’ and indicator 17 on ‘data availability for decision making’.</p>
<p>12. Innovative financial mechanisms and 13. Sustainable consumption</p> <p>Few comments were submitted on these two indicators. Respondents mentioned the need of greater clarity of what issues Defra wants to be assessed within these indicators; another</p>

Summary of responses
response suggested a measure of what extent consumption is helping to fund the state of ecosystems, habitats and priority species.
14. Expenditure One respondent suggested that expenditure by other Government departments should be included in the indicator.
15. Pressures. A number of respondents commented that this topic should be split into more than one indicator given its high profile in the Strategy. This view was echoed at the workshop. Recommendations were made to split the indicator into topics of invasive species, climate change, land-use change for development and pollution.
16. Integration of biodiversity with key production sectors Respondents agreed indicators for the agriculture, forestry and fisheries sectors should be retained. A number of respondents also suggested water companies were included within key 'production' sectors. There were a number of suggestions that we should use more outcome focussed measures instead of the current area/number based indicators - such as uptake of agri-environment scheme options targeted for priority habitats and species (e.g. farmland bird options).
17. Data for decision making There was a lot of overlap in responses between this indicator on 'availability of data for decision making' and indicator 11 on 'local decision making'. A number of respondent felt the indicator should measure more than just the total number of records available via the NBN Gateway such as the number of recent records (e.g. last 10 years/5 years) and the number of records available to the public at full capture resolution. LRCs often hold the most up –to-date and comprehensive biodiversity datasets and can be provided through many mechanisms.

ANNEX 4. Biodiversity 2020 Indicator Workshop: summary of outputs

Workshop group discussion 1. Indicator topics = Habitats and Species -Topics 1-5

Topic	1. Are existing indicators suitable?	2. Do we have data to support?			3. Keys gaps, issues and risks
		2a alternative sources or methods	2b new datasets/ approaches	2c adapt existing scheme	
1. Extent and condition of selected habitats	Concept sound, but underpinning information is poor.	Land Cover Map 2007? Remote sensing techniques with ground truthing.	Structured surveillance of a sample seems sensible that includes habitat outside designated or agri-environment areas. Standards critical. Need to agree thresholds for when habitats qualify as priorities. Need to reflect regional differences.	Tweaks to Natural England's Integrated Site Assessment approach will help. Land Cover Map 2007 could be used to remove known agricultural and built land cover to leave areas where semi-natural habitat may occur.	Group wanted a single map showing all priority habitat locations. New surveillance approaches need partnership working. Need community agreement to provide feedback when habitats are wrongly labelled. Skills need improved amongst volunteers. Link to species guilds.
2. Extent and condition of protected sites	Well worked and understood indicator.	Not discussed further.			
3. Habitat connectivity	Basic model OK, but underpinning habitat data too coarse.	Current reliance on habitat groups (broad habitat as opposed to priority habitat) - better to use improved inventory data.	Land Cover Map opportunity?	No alternatives known.	Lack of awareness of the intentions and constraints of connectivity model - still simplistic view about corridors, hedgerows etc. Communication and presentational issue maybe.
4. Status of priority species	OK, but needs scope of which species and what is included in 'status'. Data mostly poor.	Are we approaching this too traditionally - each species dealt with separately - can we look at guilds or functional groups that are related to habitats?	Structured surveillance in fixed location being explored e.g. ponds. Modelling of species distributional change using NBN-Gateway data?	Biological recording is a major mechanism that could be 'improved' by both structured approaches and more attributes being recorded.	Concern over scale of the task if done species by species. Can we use proxies for guilds or groups of species? Need stronger links to habitats.
5. Trends in abundance & distribution of widespread species	Indicator exists and is underpinned by good data sources, but is it representative of all habitats and situations?	Not discussed further.	JNCC surveillance lead has this in hand.		Role of this indicator vs all priority species - a whole taxon approach can be misleading as the variation in species response within a taxon can be very broad.

Workshop group discussion 2. Indicator topics = Habitats and species providing ecosystem services – Topic 6

Topic	1. Are there existing indicators or data sources that can be used?	2. Identifying preferred options	3. Keys gaps, issues and risks
<p>6. Status of habitats and species providing essential services (e.g. water quality, water regulation, carbon capture, pollination and public enjoyment)</p>	<p>The group identified three options for measuring ecosystem services:</p> <ul style="list-style-type: none"> a. Measure the service itself (e.g. carbon sequestered, pollination rates, value of ecosystems for recreation and tourism etc.). b. Measure change in the extent, condition, distribution or abundance of species and habitats known to be critical for ecosystem services (e.g. extent an condition of peat bogs – for carbon, abundance of insect pollinators etc.). c. Measure the potential or capacity to deliver ecosystem services (e.g. diversity or population structure indices). <p>The group agreed that although the ideal would be to report on ‘a’ because it would resonate more directly with a general audience, data were likely to be limited and so indicators would focus on categories b and c.</p> <p>The group also pointed out that the ‘17% restoration outcome’ will require some identification of habitats supporting ecosystem services.</p>	<p>The group identified a number of possible options for developing indicator for ecosystem services. They fell into four groups:</p> <ul style="list-style-type: none"> a. Public enjoyment (e.g. from MENE) - links to topic 8. b. Food security (genetic resources, fisheries and pollination services). c. Natural resources (e.g. water quality). d. Soils and carbon. <p>The group also identified a specific candidate indicator for ‘c’ on the “balance of water company expenditure on catchment management vs water treatment”. It is also relevant to the need to develop indicators on businesses integrating biodiversity.</p>	<p>The group identified a number of further considerations to be addressed by the indicators:</p> <ul style="list-style-type: none"> a. Which service are in greatest decline (in UK National Ecosystem Assessment)? b. Which services are identified as the most important (in the UK NEA)? c. Which services are most closely related to biodiversity? d. Which services are likely to respond within the reporting timetable (2020)? e. What are the policy priorities?

Workshop group discussion 3. Indicator topics = Public awareness, enjoyment and engagement - Topics 8 - 9

Topic	1. Are there existing indicators or data sources that can be used?	2. Identifying preferred options	3. Keys gaps, issues and risks
<p>8. Awareness, understanding and support for biodiversity conservation</p>	<p>Current indicators on public attitude to biodiversity are based on Defra omnibus public attitudes surveys.</p> <p>We may need to ask biodiversity questions in other contexts e.g. life satisfaction surveys.</p> <p>Also need to focus of “people’s enjoyment of the natural environment” (link to topic 6).</p> <p>Potential to use data from Monitor of Engagement with the Natural Environment (MENE).</p>	<p>What we will need to do is refine the questions that are asked. Proxy measures have a role (e.g. wildlife gardening, membership of NGOs, ‘wild visiting’ and environmental volunteering – see topic 9 below), but we need to go further in capturing real values shift and depths of understanding over the coming years.</p> <p>The group agreed that MENE data can provide information about behaviours and values which will give greater insight than attitudes as to whether or not people are reconnecting with the natural environment.</p>	<p>Is action for, awareness, understanding and support of biodiversity’ really what we interested in? Or are we actually interested in ‘action for, awareness, understanding and support of nature or the natural environment’, terms that are more readily comprehensible to the majority of people?</p> <p>There are real challenges in using and interpreting the results of omnibus surveys:</p> <ul style="list-style-type: none"> a. Continuity of questions over time. b. Survey design issues - mixed / false messages (what does this tell you?). c. How will results inform policy changes? d. Are we right in just measuring attitudinal changes for its own sake? – recognise that we might not get the right behavioural change.
<p>9. Taking personal action for biodiversity</p>	<p>Current indicators on volunteering and undertaking wildlife gardening – OK.</p> <p>Need to focus on “action for nature”. (e.g. RSPB – “Steps for nature programme; RSPCA – wildlife rescues”).</p> <p>We need to be smarter where we get our data from – what about data collected locally.</p> <p>Potential to use data from MENE.</p>	<p>Group agreed that we mustn’t be too precious and need to capture what people can contribute to the Natural Environment (need to broaden out definition – not just conservation).</p> <p>The group agreed that the following indicators should continue (as proxies): Environmental volunteering and Wildlife gardening.</p> <p>However, recognised that these indicators may not pick up all groups of society (what about those that don’t engage in the natural environment or have gardens – lower socio-economic classes).</p> <p>The group identified the following areas that could be developed further:</p> <ul style="list-style-type: none"> a. Schools: wildlife visits / outdoor learning (links to national curriculum) or schools with wildlife ponds. b. Citizen science programmes (include under volunteering). c. Taking action to protect local environment (links to green space). 	<p>Need to understand motivation behind peoples actions. Narrative behind indicators is important.</p> <p>Overlaps and links to other indicators is important e.g. Sustainable consumption (buying peat free products, recycling).</p> <p>We need to somehow capture link between awareness and action (e.g. people buying low phosphate washing powder and water quality).</p> <p>Links to “localism agenda”.</p> <p>There needs to be stronger links to the Natural Environment White Paper commitments on reconnecting people and nature:</p> <ul style="list-style-type: none"> a. environmental volunteering b. action to get more children learning outdoors. c. improving people’s health locally. 4. better access to nature (green space). d. better access to environmental information.

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		Also links to human wellbeing and health benefits for people engaging in the natural environment (volunteering, walking etc) – could be explored.	

MENE – Monitor of Engagement with the Natural Environment

NEWP – Natural Environment White Paper