UKEOF
ENVIRONMENTAL OBSERVATION FRAMEWORK

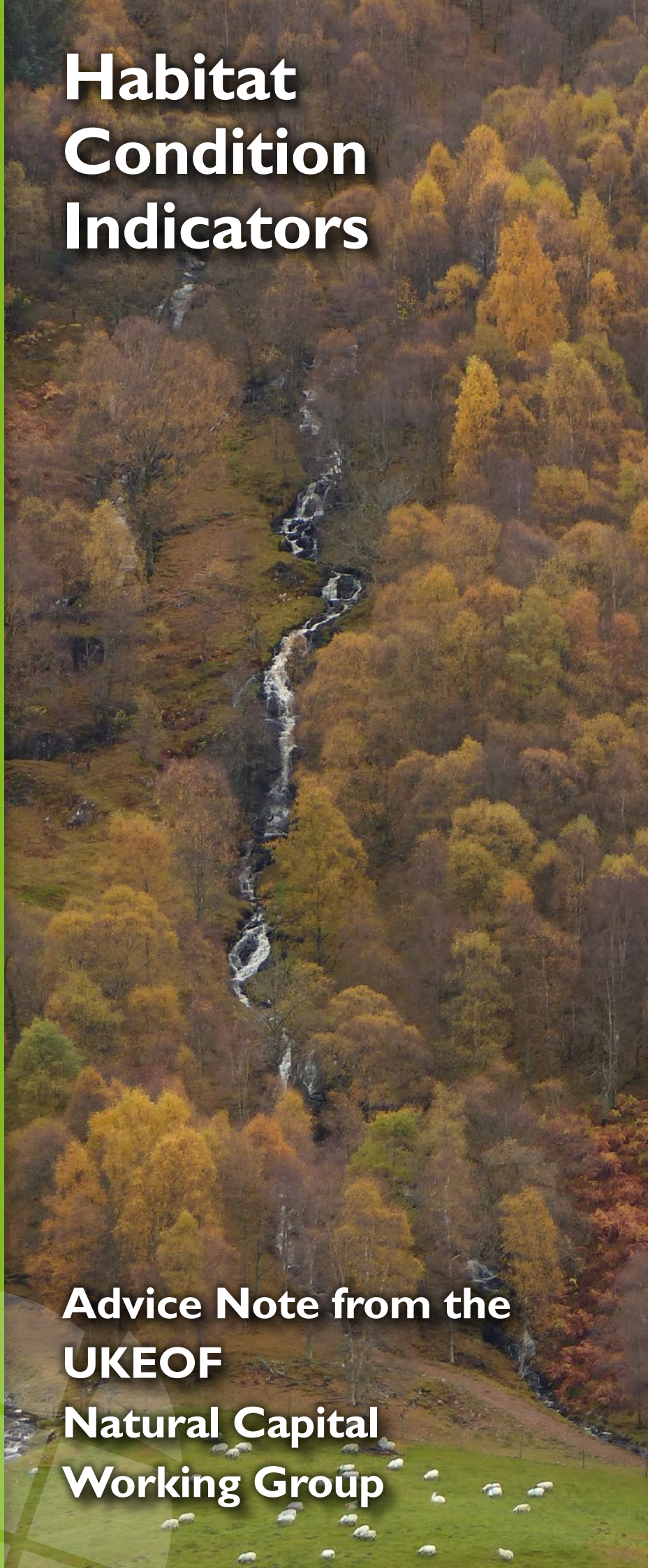
Habitat Condition Indicators

Summary

This advice note considers why quality/condition indicators are important for monitoring natural capital. It is aimed at government agencies as well as organisations and businesses who are looking to apply the natural capital approach.

Key messages:

- Condition indicators are able to demonstrate the health of an ecosystem and the potential for long term sustainable provision of ecosystem services from natural capital assets
- Condition indicators are important for understanding the impacts of management on natural capital assets.



Advice Note from the UKEOF Natural Capital Working Group

What are condition indicators for – what can and can't they do?

Condition indicators are used to demonstrate the ability of habitats/ecosystems (natural capital assets) to sustainably provide benefits now and into the future. Condition indicators can be combined with data on extent and spatial arrangement to create a good understanding of the state of natural capital assets. They can't always tell us the direct drivers and pressures influencing changes in condition. They also don't provide a measure of the benefits or values that people derive from them, although they are fundamental to the state of the ecosystem assets which underpin these benefits.

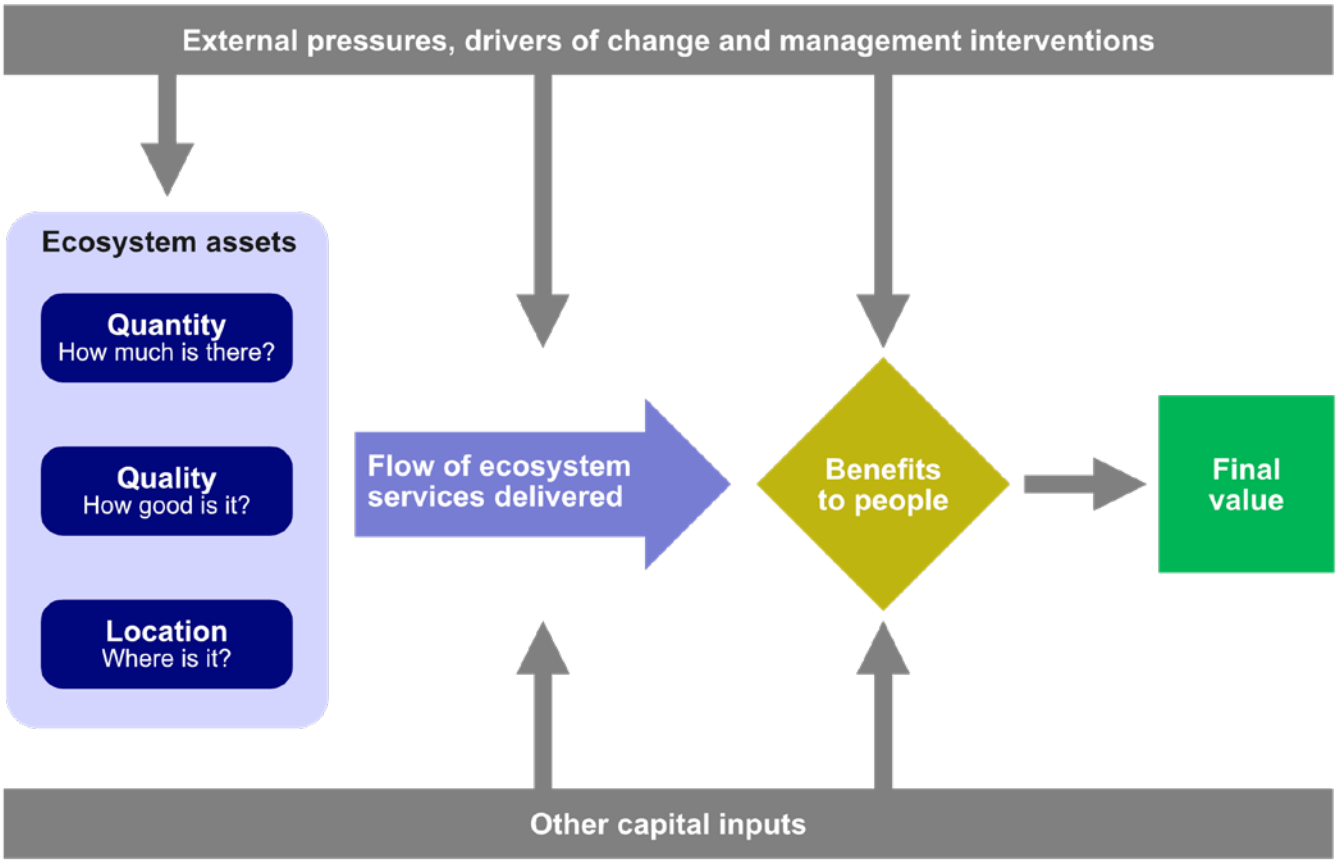


Figure 1: The natural capital logic chain, adapted from original image by Natural England

How do you measure the health/sustainability of the ecosystem?

Natural capital asset quality indicators vary by both ecosystem type and ecosystem service. What is good condition for crop production is not the same as for e.g. climate regulation, water quality or flood prevention. However, condition indicators can be identified which are relevant to multiple, but not all, ecosystem services simultaneously. Work by Natural England on the development of natural capital indicators[1] (including for asset quality) found that, when compared with work on Favourable Conservation Status for biodiversity, there were strong synergies around what is good for biodiversity also being good for the provision of multiple benefits. This work also showed that natural ecosystem function is critical for both the health of the ecosystem and its ability to sustainably provide multiple benefits into the future[2]. Condition indicators can come in many different forms including those that look at the assemblages or abundances of different species (biodiversity). The Dasgupta review[3] recognises that biodiversity is fundamental to the quality of natural capital. Other indicators, for example structural indicators like woody cover or within habitat structural diversity, may be relevant in particular habitats, e.g. woodlands. Functional indicators might include measures of nutrient status, hydrology, soil, and habitat heterogeneity.

What would be the most appropriate datasets to help policy makers improve the condition of the environment?

Spatially and temporally representative data at appropriate scales, including field data, is important for the provision of indicators, and where already available should be built on. The effectiveness of existing datasets for the provision of indicators may however be constrained by prior directions of monitoring e.g. SSSI monitoring, set up with specific policy aims. In addition, cost and effort of collection means it is likely that there will be trade-offs between spatial and temporal data availability.

What to do when there are gaps in the data for production of indicators?

There are two different types of data gaps relating to indicator production: gaps in existing data series and gaps where there is no relevant data collected at all. Indicators may thus be a compromise between available and optimal data. Where this is the case, it is important to state this and apply appropriate caveats to any findings, e.g. traffic light systems or confidence intervals. Where no suitable data is available it may be useful to highlight this gap to encourage the ecosystem service to be included in final decision making in other ways, such as through expert opinion and qualitative methods.

How often should natural capital condition assessments be carried out

Assessments of natural capital and changes in condition should be based on the availability of datasets (and how often these are updated) and on a timescale appropriate to changes in the ecosystems themselves. For example, inter-annual variability is common in species and habitats in response to weather patterns, hence longer term trajectories of change are more reliable for evaluating the effects of drivers including long-term climate change.

What baselines are we measuring habitat/ecosystem condition indicators against and what is the anticipated target end state in relation to the provision of desired ecosystem services?

Habitats are dynamic and whilst it is possible to target certain aspects of condition, e.g. a desirable species composition, or soil carbon content for some habitats in some places, it is often more important to have a baseline from which to measure change rather than a targeted end state. This may be particularly useful for organisations adopting environmental net-gain principles. Any target end state will be individual to each project and will be influenced by international, national, regional and local policy and targets as well as local stakeholder interests and opinions. Some habitat end-states will be more obvious than others, e.g. non-climax communities. All baselines are likely to be affected by climate change and other global drivers.

What needs to happen to improve condition?

Condition is related to the benefits derived from habitats. If ecosystem services and benefits can be linked to desired outcomes then value chains can be used to demonstrate the importance of good quality habitats for policy objectives[1]. Understanding the long term benefits that are derived from good quality ecosystems can act as a driver for conservation and restoration efforts.

There is a tendency to produce and monitor indicators without seeking to understand and address the drivers causing them to change. It is important to understand the drivers and interventions[4] that influence indicators in order to best target efforts to improve condition.

How do different condition indicators sit alongside each other?

Given the inherent complexity of ecosystems and the multiple ecosystem functions needed for the full range of benefits we derive from ecosystems, a range of condition indicators may be required. Communicating information about multiple indicators in a simple way may require the creation of composite indicators[5], dashboards or clearly written communication[6].

REFERENCES

1 Natural Capital Indicators: for defining and measuring change in natural capital - NERR076: http://publications.naturalengland.org.uk/publication/6742480364240896

2 Generating more integrated biodiversity objectives – rationale, principles and practice - NERR071: http://publications.naturalengland.org.uk/publication/5891570502467584

3 The Economics of Biodiversity: The Dasgupta Review: https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

4 Managing Ecosystem Services Evidence Review (Formally Ecosystem Services Transfer Toolkit NECR159) - JP033: http://publications.naturalengland.org.uk/publication/5890643062685696

5 NFI Woodland Ecological Condition: https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/what-our-woodlands-and-tree-cover-outside-woodlands-are-like-today-8211-nfi-inventory-reports-and-woodland-map-reports/nfi-woodland-ecological-condition/

6 Scotland's Natural Capital Asset Index: https://snh.maps.arcgis.com/apps/Cascade/index.html?appid=d5d1ed312b1f480f810a45a237cfeefc

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