

Guidelines to highlight good practice in ecosystem service mapping

The principles below should be considered when starting any ecosystem service mapping project. We have included principles that are relevant for any project, regardless of the scale of the project or the ecosystem services that are being mapped.

1. Consider fitness for purpose

Some mapping projects will have clear aims and objectives from the beginning, while others may take a more flexible approach, adjusting their goals in an adaptive manner based on data availability and other factors that are subject to change. However, all projects will benefit from considering, from the outset, the main purpose of the ecosystem service mapping and the type of project development and outputs that are needed in order to fulfil that purpose.

For example, if the purpose of the mapping is to produce highly detailed maps for the purpose of research or land management planning (and time and resources are not limiting factors), then that project may choose to spend a large part of the project time and funding on data and model development. Alternatively, if the purpose of the project is to develop maps that will mainly be used in an indicative manner in order to encourage discussion or communication with stakeholders, simple maps may be more appropriate. In such cases, absolute accuracy may not necessarily be so important, and overly-detailed maps may actually be counter-productive and divert attention from the main purpose of the project. Instead, simple maps can be developed further using stakeholder participation.

2. Use available data where possible

Most projects will seek to use the best available data wherever possible for their maps. But often, due to licensing and/or funding limitations, those data may not be obtainable. Project officers should therefore undertake an assessment of which datasets are suitable and available to them at the start of the project.

For some projects, it may be appropriate to spend considerable time and resources trying to obtain or collect data. However, there may be datasets that are freely available and would be suitable as proxies for the ecosystem services that the project intends to map. Using these datasets may be the most cost and time effective approach until new datasets become available. Potential data limitations will need to be acknowledged from the beginning of the project and explained fully when maps are presented to stakeholders and/or end-users.

3. Involve stakeholders from the outset

By involving a range of stakeholders in mapping projects from the start of the project, it is more likely that the maps will be fit for purpose, best-suited to stakeholder needs and best-

adapted for use in the study area. Stakeholders can be internal or external to the organisation conducting the mapping depending on purpose and scale of the mapping project undertaken.

Methods of stakeholder involvement can take place using meetings, workshops, participatory GIS or similar methods which allow for participation and interaction. If stakeholder involvement is a primary objective of the project, then these meetings should take place as regularly as time and resources allow.

[For an example of a project with regular stakeholder involvement see: the 'Tamar Catchment, Participatory ecosystem service mapping' project]

4. Use an iterative and flexible, but well-documented approach

In order for stakeholder involvement to be most beneficial, projects will need to take an iterative and flexible approach. Project officers should be prepared to adapt to feedback and change the focus of the work if necessary.

Whatever methods are used for the development of ecosystem service maps, it is critical that projects retain a clear record of procedures and any steps taken to transform or amend data, so that the same approaches could be replicated consistently by other mapping projects.

5. Learn from other projects

Ecosystem service mapping is a growing field, with new projects starting all the time. However, there is already a wealth of projects that have gone through the process and have created maps in a way that could be beneficial to new projects starting out. It is therefore important to take stock at the start of any project of what other projects have been done, what methods have already been used and whether those projects have something to offer, such as data.

There are existing resources, such as the BESS Ecosystem Service Mapping Gateway that list a number of projects, operating at different stages, with details of their approach and how to contact the project representative.

In turn, existing projects need to ensure that they collaborate and share knowledge with other organisations and mapping projects as much as possible, so that best practice can evolve over time.

6. Update as new data is available

Project officers should ensure that, whatever method is used for an ecosystem service mapping project, it can be updated as new data becomes available. It is important to build

longevity into a project, even if it is not clear whether there will be funding to continue it in the future.

Many aspects of the landscape could change over the course of an ecosystem service mapping project and this could change aspects of the mapping outputs. Projects may alter some of the maps based on stakeholder or expert opinion and this will need to be incorporated in the project design as well.

7. Maps are only one tool in the Ecosystem Approach

While ecosystem service mapping is an expanding area that offers many benefits and uses within the ecosystems approach, the approach must be used in conjunction with other tools and processes. The final map output can sometimes be considered the final part of the process whereas, for some projects, it may be the beginning in terms of opening communication and dialogue between relevant stakeholders.

These Guidelines were written by NERC's Biodiversity and Ecosystem Services Sustainability (BESS) programme which ran from 2011 - 2017.