

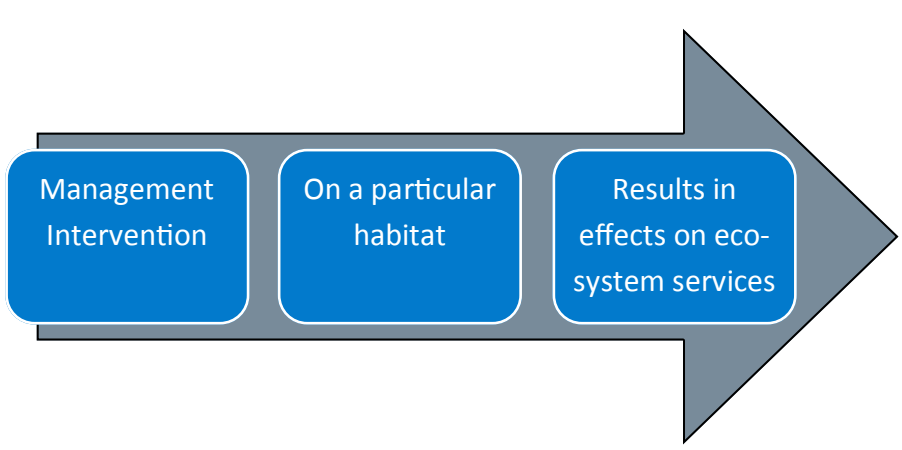
MANAGING ECOSYSTEM SERVICES—EVIDENCE SHEETS

Purpose: These sheets provide an overview of the evidence on the effect of a particular management intervention on ecosystem services, provided by a specific habitat. They provide an overview of the **quantity** of evidence, the **quality** of evidence and the **direction** of the effect. A graphic is provided on the front page of each datasheet which demonstrates this. Text boxes on each provisioning, cultural and regulating service then gives further detail on the evidence available. Finally, a full reference list for the evidence cited is given.

The Method: Data were compiled from a range of sources, mostly from peer-reviewed published articles. Literature searches were conducted using Web of Science. The search terms were '*habitat + management intervention*' where *habitat* and *management intervention* were substituted by each key habitat and the list of management interventions as well as '*habitat + ecosystem*'. A search was also conducted for '*habitat + ecosystem service*' with the list of services being taken from the UK National Ecosystem Assessment (UK NEA)¹ and included others such as *health* and *education*. In addition, an author search from each chapter of the UK NEA was carried out as well as citation records on key papers which were subsequently found. The geographical range was Northern Europe, but occasionally sources from other regions were used if they were applicable globally. Papers had to show a proven link between a management intervention on a habitat and an effect on an ecosystem service output. The broad methodology of the Natural England upland evidence reviews were used to assess information prior to data entry². Using this method, papers were assessed on the basis of:

1. The habitat of interest.
2. The intervention of interest, in this case the management intervention.
3. The comparison between the management and no management.
4. The level of outcome to be considered, in this case, change in the provision of an ecosystem service.

Data were then associated with the range of ecosystem services as used in the UK National Ecosystem Assessment¹, but with the addition of some other categories such as 'health and wellbeing' and 'education'. Data were presented only if there was a good range of evidence and service outputs available from the evidence. This meant that some smaller and more specific management interventions, where only limited evidence was available, were omitted. The habitats which were included were uplands, freshwater, lowland agriculture, urban, marine and coastal. The full database and methodology by which these sheets were compiled can be found by following the electronic link [Evidence Spreadsheet](#).








Evidence Chain







The evidence used must fulfil the criteria that there is a management intervention on a particular habitats which results in a measurable change in an ecosystem service.

Presenting the information: Each datasheet has the habitat and management intervention at the top right on the front page. There is also a text box detailing the specific management intervention at the top left. Data are presented graphically for all ecosystem services there is evidence for. The graphic lists the ecosystem services, then an indication of the quality of evidence (shade of green) which indicates whether the evidence is good (clear and strong), medium (not as clear, perhaps equivocal) or weak (marginal, small scale study, weak level of significance). The width of the arrow within the box indicates whether the effect of the management is strong on the ecosystem service indicated, medium or low in terms of the benefit to that service of the management indicated. The direction of the effect on the service is also indicated by the direction and placement of the arrow. Finally, an indication of the number of sources that show direct evidence of the effect (demonstrating within the paper that the effect on the service occurs) and indirect (that the effect is not demonstrated directly but can be reasonably inferred), are shown by the 'radio bars' graphic as below.

KEY

Quality of Evidence		Quantity of Evidence	
Good		Number of sources showing direct evidence	
Medium		Number of sources showing indirect evidence	
Poor			

Magnitude and Direction of Effect

		Direction	
Magnitude	Strong		
	Medium		
	Low		

Quantity of Evidence

1 bar = 1-2 studies
 2 bars = 3-5 studies
 3 bars = 5-10 studies
 4 bars = >10 studies

Example:

Flood Control



This entry would show that the management intervention had a medium positive effect on the ecosystem service 'Flood Control' but that the evidence for this was weak (in this case due to limited numbers of studies). There was more evidence that the effect was neutral—that this management had no beneficial or no negative effect on flood management, and there is a medium quality of evidence for this. Finally, there are no direct studies of this, but a small number (3-5) of indirect studies.

Text information: Each broad service category has a text box divided into Provisioning Services, Cultural Services and Regulating Services. Biodiversity (Wild Species Diversity in the UK NEA¹) is included within Cultural Services while in the UK NEA it is positioned between Provisioning and Cultural Services. This is simply for formatting reasons. The evidence is given in terms of very brief summaries of the articles reviewed divided into categories where they show strong, moderate or weak evidence in line with the Natural England evidence review methodology². Text citations are given in the order in which they are used in the text and indicated by a superscript number.

A reference list is provided at the end of the sheet and is listed by the order in which citations occur. Full references are given including the Digital Object Identifier (DOI) where available.

REFERENCES

1. UK National Ecosystem Assessment (2011) The UK National Ecosystem Assessment Technical Report. UNEP-WCMC, Cambridge.
2. Stone, D.A. (2013). Natural England Evidence Reviews: guidance on the development process and methods (1st Edition 2013). Natural England Evidence Review, Number 001.