



Bridging the gap between policy and knowledge
on biodiversity in Europe

Method 19 Systematic map

Summary of method

Structured, step-wise methodology following an *a priori* protocol to comprehensively collate and describe existing research evidence (traditional academic and grey literature).

Systematic maps should be conducted according to the rigorous standards demanded by review coordinating bodies such as the Collaboration for Environmental Evidence¹ and the Social Care Institute for Excellence SCIE², as well as ROSES reporting standards (see references below). Reporting requirements include: protocol of methods, fates of all articles screened at full text, transparent documenting of all methods used. Tools such as PredicTER enable the calculation of the time needed to conduct systematic maps (see below).

Key references

James KL, Randall NP, Haddaway NR (2016) A methodology for systematic mapping in environmental sciences. *Environmental Evidence* 5, 7.

SCIE systematic mapping guidance

www.scie.org.uk/publications/researchresources/rr03.asp

Haddaway NR and Westgate MJ (2018). Predicting the time needed for environmental systematic reviews and systematic maps. *Conservation Biology*. The PredicTER tool is available at <https://estech.shinyapps.io/predicter/>

Haddaway NR et al (2018). ROSES RepORting standards for Systematic Evidence Syntheses: pro forma, flow-diagram and descriptive summary of the plan and conduct of environmental systematic reviews and systematic maps. *Environmental Evidence*, 7(1), 7.

¹ www.environmentalevidence.org

² www.scie.org.uk



Examples of application

A systematic map on the impacts of agricultural management on soil organic carbon in boreo-temperate regions (Haddaway *et al.* 2015) has been used by government agency in Sweden (Swedish Board of Agriculture, Jordbruksverket) to generate funding for extension work, including a meta-analysis of the impacts on yield.

Haddaway NR et al (2015) What are the effects of agricultural management on soil organic carbon in boreo-temperate systems? *Environmental Evidence* 4(1), 1.

Systematic map

Cost	Staff (3-24 months FTE), subscriptions (database access, article access), software (reference/specialist review management), travel and subsistence, expert (informatician, visualization/database specialist)
Time required	6 months - 4 years Affected by: quantity of literature, availability of staff, response time
Repeatability	High (if conducted and recorded, and archived properly)
Transparency	High (if conducted well, i.e. endorsing organisations)
Risk of bias	Low (if conducted well), acknowledges risk of bias transparently in evidence base and review method
Scale (or level of detail)	Independent of scale
Capacity for participation	Potential consultation throughout
Data demand	High (no reanalysis of existing data)
Types of knowledge	Scientific/technical, explicit
Types of output	Written report plus other communication materials (e.g. policy brief), searchable database of existing evidence, interactive geographical information system (GIS) possible, identification of knowledge gap/knowledge cluster
Specific expertise required	Training, systematic reviewer/informatician, topic expert, visualisation/database specialist

Strengths

Any type of documented information can be included

Very comprehensive - likelihood of missing information is low

Protocol externally peer-reviewed and published, increasing transparency and registering intent to conduct the review

Conduct and reporting can be supported by coordinating bodies that provide assistance and specialized peer-review

Updating is relatively quick if methods have been reported well

'Upgrading' systematic to full systematic review on sub topics with sufficient studies is relatively rapid because much of the work has already been done

Coordinating bodies exist that can act as additional endorsement

Fully systematic, transparent method with full documentation allowing verification and repeatability

Low risk of bias

Open access

Highly resistant to criticism

Usually peer-reviewed

Interactive and searchable resources (database/GIS/visualizations)

Includes stakeholder engagement

Suitable for broad topic areas

Weaknesses

High time/resource (staff and expertise/training/access to research papers) requirement

Report typically written only in English

Systematic maps with large evidence bases may become out-of-date relatively quickly and require updating before full systematic reviews can be undertaken, although this is a relatively rapid task

Difficult to interpret main report without additional forms of communication (e.g. factsheets), although these are usually done