Eco Evidence

eWater

Store and analyse environmental evidence

Do you need to make a scientifically defensible assessment about cause-effect in aquatic environments?

An understanding of cause and effect is central to decision-making in environmental management. It matters most where decisions may be subject to challenge or where restoration budgets are tight and managers are looking for the best value.

Eco Evidence software facilitates causal assessment for environmental management, and offers a mechanism to make best use of the extensive pool of published research. With Eco Evidence you can search and access a reusable knowledge bank of atomised pieces of evidence, relevant to specific cause-effect associations, extracted from scientific papers. Eco Evidence helps answer cause-effect questions, make assessments, plan for restorations, and carry out critical reviews on a specific topic of interest.

Eco Evidence Database

The online database stores information about causal relationships extracted from environmental science studies. 'Atomised' information captured in the Eco Evidence Database is specifically geared to support cause and effect assessments. The data describes aspects of a study's (i) location or environment, (ii) methods and study design, and (iii) results, as well as providing citation details. The database may be searched for studies containing evidence for specific causal relationships and then use the information to evaluate the strength of evidence for a cause-effect relationship using the Eco Evidence Analyser. Users may also add evidence to the database yourself, for use immediately or at a later date.
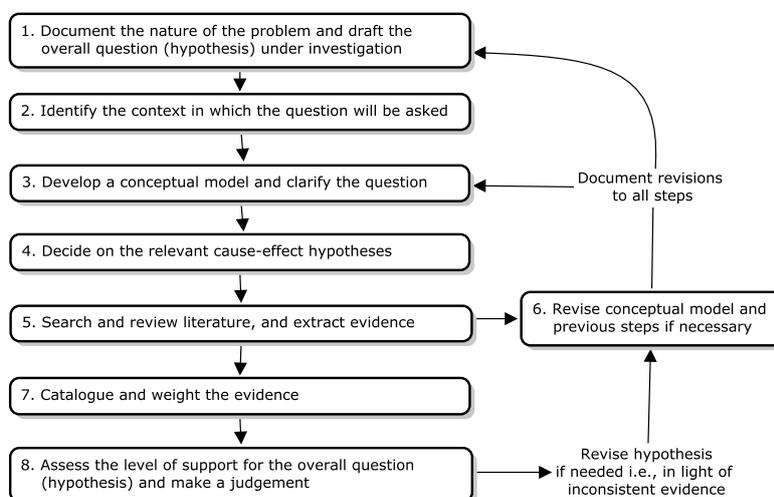
Eco Evidence Analyser

By allowing evaluation of evidence from environmental science literature in a standardised, transparent and repeatable manner, the Eco Evidence Analyser reduces bias and subjectivity. The analysis method draws together information from the literature to assess how a particular human activity or natural event may influence the environment. The information is synthesised using a 'causal criteria' approach adapted from a method originally developed by epidemiologists in the 1960s. The Eco Evidence Analyser guides users through an eight-step framework to gather evidence and weight it according to study design features.

KEY FEATURES:

- Database for storing, building and re-using ecological evidence.
- Analysis based on the causal criteria method — adapted from epidemiology where similar methods were used to evaluate whether smoking causes cancer— can now be used for examining the evidence base to evaluate environmental cause-effect relationships.

Download now

Eco Evidence

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┌─────────────────────────────────────────┐
│ 1. Document the nature of the problem    │◄──────────────┐
│    and draft the overall question        │               │
│    (hypothesis) under investigation      │               │
└─────────────────────────────────────────┘               │
                    ↓                                       │
┌─────────────────────────────────────────┐               │
│ 2. Identify the context in which the     │               │
│    question will be asked                │               │
└─────────────────────────────────────────┘               │
                    ↓                        Document revisions
┌─────────────────────────────────────────┐  to all steps
│ 3. Develop a conceptual model and        │◄──────────────┤
│    clarify the question                  │               │
└─────────────────────────────────────────┘               │
                    ↓                                       │
┌─────────────────────────────────────────┐               │
│ 4. Decide on the relevant cause-effect   │               │
│    hypotheses                            │               │
└─────────────────────────────────────────┘               │
                    ↓                  ┌──────────────────────────┐
┌─────────────────────────────────────┐│ 6. Revise conceptual     │
│ 5. Search and review literature, and  ├►│    model and previous    │
│    extract evidence                   ││    steps if necessary    │
└─────────────────────────────────────┘ └──────────────────────────┘
                    ↓                              ↑
┌─────────────────────────────────────────┐       │
│ 7. Catalogue and weight the evidence     │       │
└─────────────────────────────────────────┘       │
                    ↓                    Revise hypothesis
┌─────────────────────────────────────┐  if needed i.e., in light of
│ 8. Assess the level of support for the ├►│  inconsistent evidence
│    overall question (hypothesis) and     │
│    make a judgement                      │
└─────────────────────────────────────────┘
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The evidence from many studies is then synthesised and evaluated to assess the level of support for a causal hypothesis. When complete, the software produces a report on the conclusions, and a transparent description of how those conclusions were reached.

You can use Eco Evidence Analyser to:

- assess the likely environmental impacts of a development proposal
- establish whether or not an environmental impact has occurred
- identify the cause of poor water quality
- draw on existing scientific literature to assess the more general applicability or transferability of results from local field studies
- carry out evidence-based planning
- design effective on-ground restoration or management programs
- make transparent, repeatable and defensible conclusions where decisions based on these may be contested
- adopt as a means of quality assurance for reviews you undertake (e.g. as a consultant to environmental managers)
- focus a literature review on very specific questions of interest with output capable of being published as a succinct review paper.

Eco Evidence is supported by an online course, suited to many areas of environmental science. Participants will:

- gain a practical understanding of the Eco Evidence approach for evaluating causality in environmental science.
- learn how to evaluate the quality of scientific literature evidence in terms of attributes of the study design and various eco evidence.
- learn to use the Eco Evidence method and software program to provide confidence when inferring a cause and effect association

The course is available and delivered online, via an interactive website, by qualified educators with content expertise.

Want to know more?

Go to our website at **www.ewater.com.au**
T: 1300 5 WATER E: contact@ewater.com.au