

Collaboration for
Environmental
Evidence

Collaboration for Environmental Evidence

ANNUAL REPORT 2013

*Building the
Evidence Base
for Action*

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COLLABORATION FOR ENVIRONMENTAL EVIDENCE

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HIGHLIGHTS

Looking back at 2013, it could be summed up as a year of advancement of some of our main activities. Our network of Centres has grown with the addition of our Swedish Centre based at EviEM in Stockholm. EviEM was founded in 2011 with a substantial donation from the Swedish Agency MISTRA. EviEM has a key objective of conducting systematic reviews to inform environmental management. The centre is already very active in conducting CEE systematic reviews. More details on this new centre can be found on page 10.

We welcomed two new Trustees to the CEE Board; Simon Gardner and Gerry Post (see page 23).

We achieved our first full year of publications for our journal Environmental Evidence. During 2013, five systematic reviews and 14 protocols were published. The low number of systematic reviews is to be expected at such an early stage and the larger number of protocols indicates that many more are in progress. We continue to add experienced systematic reviewers to the Editorial Board to enhance our capacity to help Review Teams achieve the highest standards for their publication.

Training activities continue to grow as CEE develops its capacity building function. Training events took place in Bangor, Stockholm and Berlin as described on page 16.

With the growth in the collaboration, CEE has embarked on social networking with a Group site on LinkedIn that allows contributors to initiate discussions directly related to CEE, and a Twitter account (@EnvEvidence) that we hope decision makers will follow to keep up to date with our latest publications.

In November the CEE board and other key contributors met in London to discuss the CEE Strategic Plan and the development of version 5 of CEE Guidelines on the conduct of systematic reviews and evidence synthesis. Two days of lively discussions helped consolidate the strategy of the organisation and achieve mutual understanding of our goals among a diverse group of globally distributed contributors.

CEE's global influence continues to grow as a reliable source of evidence for decision making in environmental management. Increasing numbers of organisations are using the CEE framework to assist them in producing high quality evidence reviews and are recognising that CEE Systematic Reviews represent a standard that is recognised by their stakeholders as a reliable source of evidence.

The CEE Community

The CEE is a global collaboration which works through its **CEE Centres**, which act as hubs of CEE Activity within their region, **CEE Methods Groups**, which lead development of CEE systematic review methodology and **CEE Review Groups** which encourage, facilitate and coordinate systematic review activity across specific topic areas. CEE activity is overseen by the **Board of Trustees** and is guided by the **CEE Advisory Group**.

The CEE is an open collaboration and its activity and impact is dependent upon a motivated community of contributors who support the key mission of developing a reliable evidence-base to enable more effective environmental management. **Review Teams**, who choose to undertake systematic reviews according to CEE guidelines and publish their protocols and reviews in the CEE journal, form the active core of the CEE community and engage with CEE from organisations and groups around the world. They form to undertake a specific systematic review task and may disband once this is completed and published.



Alongside these formal structures is the **wider CEE community** who engage in active discussion and exchange of information and ideas. Previously called 'Joiners', this community of contributors now interacts as an active CEE discussion group using the LinkedIn platform. To get involved, please either email cee.join@environmentalevidence.org or visit the CEE website and follow instructions for joining.

You can propose a Methods or Review Group or ask to join an existing one by mailing us at info@environmentalevidence.org

CEE Centres



CEE Centres act as hubs of CEE Activity within their region. During 2013, four Centres were active, in the UK, Australia, South Africa and Sweden.

Whilst the specific functions of CEE Centres vary somewhat from Centre to Centre they all engage in core CEE activity:

- ❖ Developing expertise in systematic review methodology in environmental management and liaising with other CEE Centres and Methods Groups to further develop systematic review methodology
- ❖ Working with practitioners and policy formers to identify need for systematic review to address questions of importance to decision-makers, particularly those of relevance within their region
- ❖ Encouraging funding of, and supporting, systematic review activity in their region
- ❖ Acting as a central contact point for systematic review activity in their region
- ❖ Advising review teams on development of protocols and conduct of systematic reviews
- ❖ Liaising and integrating activities with other CEE Centres to develop the CEE library and maintain a common database of systematic reviews in progress

Centres may also opt to become endorsed as a CEE Training Centre, delivering training in CEE systematic review methodology across their region. For further details please see the Training information on Page 14.

Environmental Evidence Australia

Environmental Evidence Australia (EEA) maintained an active involvement in CEE throughout 2013. The end of 2013 however, saw some changes and new opportunities for CEE in Australia. It was decided that the CEE presence in Australia would be restructured to form a network of collaborating organisations with experience and interest in progressing the objectives of CEE. The end of 2013 thus saw the dissolution of EEA and the commencement of a transition to a new structure. The development of this new structure is being lead by Rob Richards from Evidentiary.

Progress against 2013 priorities:

CEE activities continued with a range of organisations with environmental interests including local, state and Commonwealth governments as well as regional natural resource management bodies throughout Australia including:

- ❖ Commencement of a systematic review with the University of Canberra *“Does taking part in group activities to improve the natural environment influence human health and wellbeing of adult environmental volunteers and if so, what are the mechanisms through which these effects occur?”*
- ❖ Delivery of an introductory systematic review training workshop with CSIRO.
- ❖ Delivery of three training workshops on evidence based practice including systematic review.
- ❖ Delivery of four seminars on the value of evidence based practice including the role of systematic review in evidence based decision making to universities and government agencies.
- ❖ Meetings with four Government groups to promote the value of systematic review.
- ❖ Contribution to the development of SR training material including review of several modules of the Distance Learning Course being developed by CEBC.
- ❖ Contribution to the development of a CEE systematic review promotional video.

Objectives for 2014:

While many of the 2014 objectives will be the same as those of 2013 there are some exciting new objectives in line with the establishment of the new Australian CEE Network:

- ❖ Facilitate and lead the establishment of the new Australian CEE Network involving several universities and research organisations, reporting to CEE on these activities.
- ❖ Hold a strategic planning and ‘think tank’ workshop with all the Australian CEE Network collaborators.
- ❖ Facilitate the establishment of review teams to undertake systematic reviews in key topics of relevance to environmental management.
- ❖ Publish reviews in the Journal ‘Environmental Evidence’.
- ❖ Undertake training in systematic review with a specific focus on workshops designed for a) policy makers b) practitioners and c) researchers
- ❖ Build momentum of raising awareness on the value of systematic review within the environmental and sustainability sectors.
- ❖ Undertake joint training with other CEE Centres.
- ❖ Contribute to development of Version 5 of the CEE Systematic Review Guidelines.
- ❖ Contribute to completion of the CEE Strategic Plan.
- ❖ Increase collaboration with other organisations concerned with evidence based practice.
- ❖ Continue to build capacity and collaboration between all CEE Centres.

Contact: Rob Richards www.evidentiary.com.au or robr@evidentiary.com.au

CEE Johannesburg

The Collaboration for Environmental Evidence's South African Centre (CEE Johannesburg) is hosted by the Centre for Anthropological Research, University of Johannesburg.

Co-Directors: Dr Ruth Stewart and Dr Carina van Rooyen, guided by Prof Thea de Wet, Director of the Centre for Anthropological Research, University of Johannesburg

Additional staff members: Natalie Rebello Da Silva

Summary of progress against 2013 priorities:

- ❖ The protocol for our first in-house CEE review was published in April 2013 and is now one of the 'highly accessed' publications in the CEE library. The review has now been completed and is currently being written up for publication in the Environmental Evidence Journal.
<http://www.environmentalevidencejournal.org/content/2/1/7>.
- ❖ The development of our new website is underway and we hope to be online in early 2014.
- ❖ Ruth Stewart was part of a wider CEE team providing training on systematic reviews about GMOs in Berlin in March 2013.
- ❖ We contributed to an update of the CEE Guidelines for Systematic Review in early 2013. Since then, Ruth Stewart provided input to the editorial team leading the major restructuring of the guidelines. Ruth, and her colleague, Evans Muchiri, will be contributing to at least two chapters of these new guidelines.
- ❖ Our team at CEE Joburg have spent much of 2013 building relationships within the South African government. This has culminated in securing funding for 3-years from 2014-2016 to build capacity in the governments of Malawi and South Africa to use research evidence, in particular systematic reviews. Whilst this new 'BCURE' project has a broad remit, environmental management has already been identified as a priority area and we are excited about the possibilities for 2014.
- ❖ In addition to the BCURE grant listed above, we have contributed to other grants for systematic reviews with mixed success. We are now working with Dr Nicola Randall to secure money for a joint scientific meeting on agricultural sciences which would provide opportunities to promote CEE reviews and offer training.

Our priorities for 2014 are to:

- ❖ Identify and secure funding for a second in-house CEE Review
- ❖ Launch our website
- ❖ Begin to offer courses within southern Africa
- ❖ Contribute to two chapters in the new CEE guidelines
- ❖ Continue to build relationships with key decision-makers across the region to raise demand for evidence and promote the commissioning, production and use of systematic reviews, in particular drawing on the work of our wide BCURE programme
- ❖ Continue to seek funding for CEE Johannesburg's activities, working closely with other CEE Groups and Centres.

Email: ruths@uj.ac.za (or r.stewart@ioe.ac.uk)

Twitter: @CEEJoburg

Centre for Evidence-Based Conservation

The Centre for Evidence-Based Conservation (CEBC) was established in 2003 with the goal of supporting decision making in conservation and environmental management. CEBC promotes evidence-based practice through the production and dissemination of systematic reviews on both the effectiveness of management and policy interventions and on the impact of human activities on the natural environment. With support from a wide range of organisations in the environmental and academic sectors, CEBC now acts as a source of advice on evidence-based practice both in the UK and internationally. CEBC acts as the central coordinating centre for the Collaboration for Environmental Evidence, providing the Environmental Evidence Journal editorial office and CEE website hosting functions.

Key activity during 2013:

During 2013 CEBC continued to act as the Editorial Office for 'Environmental Evidence' (see separate report on this journal) and continued activity as a CEE systematic review training centre, delivering courses in the UK, Germany and Sweden. CEBC organised a meeting of the CEE Board, Centre co-ordinators and other key contributors in London in November. Key discussion took place on the CEE Strategic Plan and Version 5 of the CEE Guidelines. The Director of CEBC, Andrew Pullin, continued to serve on the EviEM Board, and CEBC staff have once again spent time at EviEM and presented a formal training event. CEBC also completed four CEE systematic reviews including a groundbreaking synthesis of qualitative and quantitative data on 'human wellbeing impacts of terrestrial protected areas', in collaboration with the EPPI-Centre in London.

Priorities for 2014

1. Lead on the reorganisation of the journal's editorial and management system
2. Contribute to Version 5 of the CEE Guidelines
3. Contribute to further strengthening of the CEE network of centres
4. Lead on the redesign of the CEE website and website management system
5. Co-ordinate CEE training across CEE centres and other providers

The Centre for Evidence-based Conservation is based at Bangor University, UK and is led by Professor Andrew Pullin
a.s.pullin@bangor.ac.uk; www.cebc.bangor.ac.uk



The Mistra Council for Evidence-based Environmental Management (EviEM) was set up in January 2012 and became a CEE Centre in 2013. Our task is to examine and collate the scientific evidence on various environmental issues. The aim is to give decision-makers and other stakeholders access to the best scientific knowledge and thereby contribute to evidence-based environmental management in Sweden. Suggestions on topics to evaluate are made by ministries, agencies, environmental organisations etc. Teams of international scientists conduct CEE systematic reviews based on the chosen topic together with a project manager per team, from EviEM.



The Council is governed by an independent Executive Committee that meet on a regular basis. The Committee met twice in 2013.

The Mistra EviEM Executive Committee:

Standing: Jerry Melillo, Thomas Rosswall (chair), Henrik Smith

Sitting: Kathrine Richardson, Andrew Pullin, EvaThörnelöf. Jacob Fant, Kjell Asplund

Activities during 2013

EviEM published three systematic review protocols in Environmental Evidence. They are also available at the EviEM webpage (www.eviem.se):

- *What are the impacts of reindeer/caribou (Rangifer tarandus L.) on arctic and alpine vegetation?*
www.eviem.se/Documents/projekt/2012/SR1protocol.pdf
- *How effective are created or restored freshwater wetlands for nitrogen and phosphorus removal?*
www.eviem.se/Documents/projekt/SR2protocol.pdf
- *What is the influence on water quality in temperate eutrophic lakes of a reduction of planktivorous and benthivorous fish?* www.eviem.se/Documents/projekt/2013/SR3protocol.pdf

EviEM arranged two stakeholder meetings in 2013. The first meeting was held at the Swedish Board of Agriculture and the Swedish Forest Agency and focused on topics related to forest and agricultural land need systematic reviews. Several review topics were suggested by the agencies. A second meeting was held at the Swedish Agency for Marine and Water Management and focused on topics related to marine and freshwater environments. Several other agencies, regional authorities and NGO's participated in the meetings.

EviEM participated and presented the systematic review method at the Baltic Sea Science Congress held in Klaipeda, Lithuania. EviEM also participated in the Swedish EPA's annual Environmental Objective's Day and gave a short presentation about the systematic review method in general and EviEM's ongoing activities in particular. A wetlands conference was held in Nynäshamn to celebrate the twentieth anniversary of Sweden's first wetlands for the treatment of waste water. EviEM sponsored the conference and took the opportunity to inform international scientists and wetland managers about its systematic review *How effective are wetlands for nitrogen and phosphorus removal?*



EviEM facilitated a discussion session “*Evaluators as a bridge between scientists and decision-makers*” at the European Environmental Evaluators Network’s Forum in April. *Anders Turesson, Ministry of the Environment, Sweden, Fredrik Wulff, Stockholm University, Edwin Zaccai, Université Libre de Bruxelles* were invited to the panel.

Last, but not least, six EviEM Newsletters were published . The Annual report 2012 is available in English and Swedish at our web site : www.eviem.se

Priorities for 2014

- Release the first and second EviEM systematic review reports, together with popular written summary reports and fact sheets.
- Publish review protocols for the systematic reviews:
 - *What are the effects of agricultural management on soil organic carbon (SOC) stocks?*
 - *Have the phase-outs of PFASs affected concentrations in the environment?*
 - *How is biodiversity influenced by active management of protected forests?*
- Arrange new stakeholder meeting.
- Update the EviEM website and produce new information material.
- Start evaluating the review work process by interviewing review team members and arranging a workshop for the secretariat.
- Present EviEM and CEE internationally at the European Environmental Evaluators Forum in Helsinki.
- Participate in national events like the Environmental Objective’s Day 2014 in Stockholm and the Water Day 2014 in Göteborg.

The Mistra EviEM secretariat:

Back row:

Matilda Miljand, coordinator,
Claes Bernes, deputy director,
Magnus Land, project leader.

Front row:

Sif Johansson, director,
Anna Metzger, communication officer,
Bo Söderström, project leader .



Email: [info \(at\) eviem.se](mailto:info@eviem.se) first name.second name (at) eviem.se

SYSTEMATIC MAPPING METHODS GROUP

Systematic mapping is a robust, repeatable and transparent scientific method used to identify, categorise and map available literature relevant to a topic. Like systematic reviews, systematic maps use established searching protocols, and have rigorous inclusion criteria, but unlike systematic reviews, they do not attempt to answer a question. Systematic maps can be integrated into the systematic review process or be produced as discrete pieces of work. The methodology was developed for use in social science and education but offers a useful tool for environmental evidence, where a topic is too broad for traditional systematic review, or where the evidence is too disparate or unsuitable for quantitative analysis. The systematic mapping group aims to further develop the methodology for environment management systematic maps, and ensure that systematic mapping offers the greatest value possible to the evidence base.

Key activity during 2013

Systematic mapping methodology has become increasingly used over the last 12 months, and systematic maps have been funded by policy organisations such as the Department for Environment Food and Rural Affairs (UK) and the European Commission. It has become clear that a number of different approaches have been used in systematic mapping to date. Members of the systematic mapping methods group are currently working on methodology guidance to inform and standardise the approaches used. The aim of this paper is to help authors decide when best to use a systematic map, provide guidance on each stage of the systematic map process, and suggest potential systematic map outputs.

For more information on systematic mapping, or if you would like to join the Methods Group, please contact the Chair, Nicola Randall

: nrandall@harper-adams.ac.uk

and visit www.environmentalevidence.org/MGroups_maps.html.

Statistical Methods Group

The methods used to conduct systematic reviews are constantly evolving. Systematic reviews in environmental management and conservation are faced with numerous challenges due to the large variety of ecological conditions and variables and the dispersed nature of the research data. The statistical methods group aims to bring together those with an expertise and interest in quantitative data synthesis, to meet these challenges.

Key activity during 2013:

Group members Prof. Jessica Gurevitch, Prof. Julia Koricheva and Prof. Kerrie Mengersen co-edited the first handbook of meta-analysis in ecology and evolution (*Koricheva J, Gurevitch J, Mengersen K (eds). Handbook of meta-analysis for ecology and evolution. Princeton University Press, April 2013.*

<http://press.princeton.edu/titles/10045.html>). A number of chapters were written by them and other group members (Prof. Chris Schmid, Dr Gavin Stewart, Prof. Hannah Rothstein). The group are currently involved in the publication of a special issue of the Journal of Research Synthesis Methods focusing on ecological synthesis. It is anticipated that the special issue will contain articles on the similarities and differences in approach to synthesis in the different disciplines; discussion of searching, interpretation and statistical approaches to synthesis in ecology. Group members Prof. Chris Schmid and Prof. Jessica Gurevitch received a grant (\$309,382) from National Science Foundation (USA) over 2013-2016 entitled *Making Advanced Statistical Tools Accessible for Quantitative Research Synthesis and Discovery in Ecology and Evolutionary Biology*. Group members also taught meta-analysis courses at Joint Statistical Meetings, Montreal, Canada, August 2013 (Prof. Chris Schmid) and University of Tasmania, October (both Prof J.Koricheva) and Prof. Elena Kulinskaya taught meta-analysis modules on the CEE Systematic Review Methodology courses organised by the Centre for Evidence Based Conservation, in Glasgow and Bern.

Priorities for 2014:

Group members are beginning to think about Big Data in the context of systematic reviews, both in terms of use of big data as part of the review process and what the evidence synthesis paradigm can export to big data problems. We are planning an informal group meeting to consider these issues at the end of the Research Synthesis Methods meeting at York (July 2014).

**The Statistical Methods Group is led by Professor Elena Kulinskaya from the University of East Anglia (UK). For further information contact:
E.Kulinskaya@uea.ac.uk**

Ecosystem Services, Health and Well-being Review Group

As policy interest in the human well-being benefits of ecosystem services increases, a growing number of systematic reviews are being commissioned which address the human health and welfare impacts of environmental management. These reviews cut across both disciplinary (environment and public health) and methodological (drawing from qualitative and quantitative research) boundaries. There is a need to ensure that resources for evidence synthesis are directed at the most important questions and for coordination of this 'cross-over' area of review activity. The 'Ecosystem Services and Human Health and Well-being' Review Group (ESHWeB) aims to coordinate this activity and to promote interdisciplinary collaboration in seeking funding for systematic reviews and in developing and using 'fit for purpose' methodology.

Progress against priorities for 2013

Interest in the linkages between human health and well-being and ecosystem services continues to grow. There are now 12 projects in the CEE database that relate to the ESHWeB remit – seven are complete and published, one is currently a draft report and a further three have had their protocols published and the reviews are underway. Further details can be found here:

<http://www.environmentalevidence.org/ESgroups.html>

We have been promoting the work of CEE and ESHWeB through attending a range of international health and environmental conferences. We have continued to try and link between more traditional public health approaches and the ecosystem services perspective, and also to promote systematic review and evidence synthesis to disciplines that may not have previously worked within these methods.

Objectives and priorities for 2014

Given the inter-disciplinary and cross-methodological nature of undertaking reviews around ESHWeB, our core aim is to continue to act as a hub to coordinate review activity, and support those wishing to undertake reviews in this area to develop the appropriate methodology.

We will continue to network to bring together experts from a range of stakeholder organisations in order to prioritise the key topics for review, through workshops nationally and internationally. We plan to expand membership of the group.

ESHWeB is led by Dr Ruth Garside, from the European Centre for Environment and Human Health, University of Exeter Medical School, who also acts as Subject Editor for the CEE Journal , Environmental Evidence.

Organisations, groups or individuals planning to commission or undertake systematic reviews which fit this brief are invited to get in touch with us via email to:

Dr Ruth Garside, Review Group lead: R.Garside@ex.ac.uk (www.ecehh.org)

Dr Teri Knight: cee.administration@environmentalevidence.org

CEE Strategic Plan

It is five years since CEE developed its first strategic plan and so in November 2013 CEE Trustees, Centre and group leaders came together in London (with Gerry Post, Trustee, joining by Skype link from the USA) to develop the strategic plan for the next phase of CEE's growth. The starting point for the strategy was to understand and articulate the 'theory of change' underpinning CEE – what CEE aims to achieve and the mechanisms through which it envisages further success will flow. The purpose of the strategic plan is to:

- Provide clarity of the direction of CEE in the short to medium term
- Define the goals for CEE
- Articulate and communicate the activities that CEE will undertake in order to achieve its organisational goals
- Provide a framework from which CEE can measure and report on its progress

The plan is structured around three strategic foci:

- Increase the scope and application of evidence-based decision-making in environmental management.
- Build and maintain organisational capacity of CEE.
- Demonstrate the value of systematic review as a gold standard methodology for evidence synthesis through monitoring and evaluation of the review impact and effectiveness.



Participants at the CEE strategy meeting:

Back row left to right – Rob Marrs (Trustee), Teri Knight (Trustee), Sif Johannson (CEE Centre Leader), Rob Richards (CEE Centre Leader), Andrew Pullin (Chair, Trustee), Simon Gardner (Trustee). Front row left to right – Ruth Stewart (CEE Centre Leader), Elena Kulinskaya (Methods Group Leader), Barbara Livoreil and Geoff Frampton (CEE Guidelines Editors). Not in photograph – Nicola Randall (Methods Group Leader), Gerry Post (Trustee), Jenny Milward (Trustee), Ruth Garside (Review Group Leader).

The CEE Strategic Plan will be published on the CEE website early in 2014

Training

There are two types of CEE systematic review training courses. One-day 'Introduction to Systematic Review' courses provide an overview of the review process from identifying suitable questions with stakeholders, through searching, inclusion, critical appraisal and data extraction to synthesis and dissemination. These courses are not intended to equip participants with the skills and knowledge required to undertake a systematic review, rather, to provide an understanding of what systematic review has to offer, how it differs from other forms of literature review, the demands of the process and the uses of systematic review in policy and practice. The 'Introduction' courses are targeted at both commissioners and users of systematic review as well as potential authors.

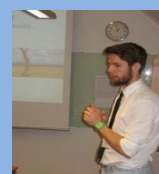
For more in-depth coverage of the systematic review process, aimed at those who wish to acquire the skills and knowledge needed to undertake a review, two or more days 'methodology' courses are recommended. These are generally 'bespoke' courses designed and delivered for a specific organisation or group.

Training in CEE systematic review is delivered by the CEE centres or trainers affiliated with them. All centres, courses and trainers are required to undergo a formal endorsement process operated by the CEE Board. During 2013 training courses were delivered by Environmental Evidence Australia, in Australia and the Centre for Evidence-based Conservation (CEBC) in Bangor, Stockholm and Berlin and Dr Neal Haddaway at CEBC obtained grant funding to develop a Distance Learning Course for CEE systematic review methodology which is due to be launched in Spring 2014. Demand for training in CEE systematic review methodology continues to grow and it is hoped that 2014 will see training opportunities increase across all CEE Centres.

If you are interested either in receiving training in CEE systematic review methodology or commissioning training for your organisation, then please either contact cee.administration@environmentalevidence.org or contact the relevant CEE Centre directly.



www.environmentalevidence.org/Training.html



CEE SYSTEMATIC REVIEWS

completed in 2013

Human well-being impacts of terrestrial protected areas

Andrew S Pullin, Mukdarut Bangpan, Sarah Dalrymple, Kelly Dickson, Neal R Haddaway, John R Healey, Hanan Hauari, Neal Hockley, Julia P G Jones, Teri Knight, Carol Vigurs and Sandy Oliver
CEE review 11-009. Collaboration for Environmental Evidence:
www.environmentalevidence.org/SR11009.html

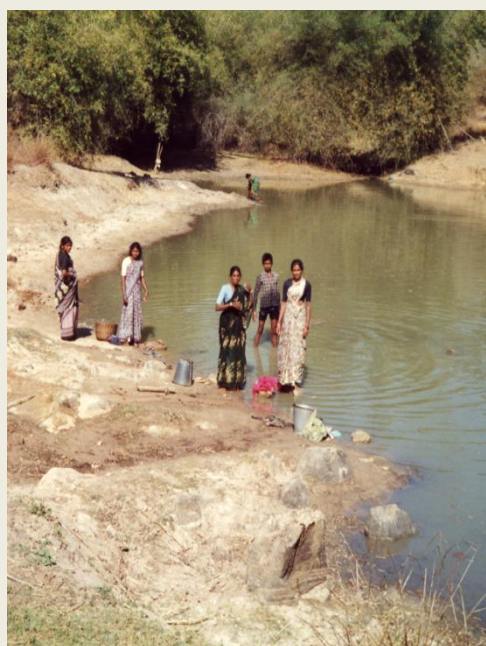
Findings: This systematic review presents two narrative syntheses; one of quantitative evidence and one of qualitative research findings. The outputs from the two syntheses are then compared in a meta-synthesis. The evidence base provides a range of possible pathways of impact, both positive and negative, of PAs on human well-being but provides very little support for decision making on how to maximise positive impacts. The nature of the research reported to date forms a diverse and fragmented body of evidence unsuitable for the purpose of informing policy formation on how to achieve win-win outcomes for biodiversity and human well-being. To better assess the impacts of PAs on human well-being the review makes recommendations for improving research study design and reporting.



Are interventions to reduce the impact of arsenic contamination of groundwater on human health in developing countries effective?

Tracey Jones-Hughes, Jaime Peters, Rebecca Whear, Chris Cooper, Hywel Evans, Michael Depledge and Mark Pearson
CEE review 11-005. Collaboration for Environmental Evidence:
www.environmentalevidence.org/SR11005.html

Findings: The effectiveness of the oxidation and filtration interventions is poor, while the evidence for coagulation, co-precipitation and filtration, subterranean and membrane and electrolytic methods is mixed. Evidence regarding adsorption and zero valent iron interventions is more persuasive with most results suggesting good evidence of effectiveness. In particular, activated alumina and sono/three-kolshi/gagri/pitcher filters have ≥95% of samples meeting national guidelines. Disappointingly, only one study reports excellent evidence of effectiveness: for activated alumina. The success of each technology was highly dependent on context, especially their acceptability to users, a sense of ownership and expectations of women's roles in society.



A systematic review of phenotypic responses to between-population out-breeding

Raj Whitlock, Gavin B Stewart, Simon J Goodman, Stuart B Piertney, Roger K Butlin, Andrew S Pullin and Terry Burke

CEE review 09-001. Collaboration for Environmental Evidence: www.environmentalevidence.org/SR62.html



Findings: This review demonstrates consistent effects of trait type on responses to intra-specific out-breeding and indicates the potential for out-breeding depression in the F2. However, our analyses also reveal significant heterogeneity in out-breeding responses within and among studies. Thus, out-breeding costs will not always occur. Conservation practitioners may be able to anticipate when such out-breeding depression should arise using an existing decision-making framework that takes into account the context of hybridising populations.



Evaluating the biological effectiveness of fully and partially protected marine areas

Marija Sciberras, Stuart R Jenkins, Michel J Kaiser, Stephen J Hawkins and Andrew S Pullin

CEE review 09-018. Collaboration for Environmental Evidence: www.environmentalevidence.org/SR79.html

Findings: The available evidence suggests that no-take reserves provide some benefit over less protected areas, nevertheless the significant ecological effects of partially protected areas relative to open access areas suggest that partially protected areas are a valuable spatial management tool particularly in areas where exclusion of all extractive activities is not a socio-economically and politically viable option.

What is the impact of infrastructural investments in roads, electricity and irrigation on agricultural productivity?

Knox, J., Daccache, A. & Hess, T.

CEE review 11-007. Collaboration for Environmental Evidence: www.environmentalevidence.org/SR11007.html

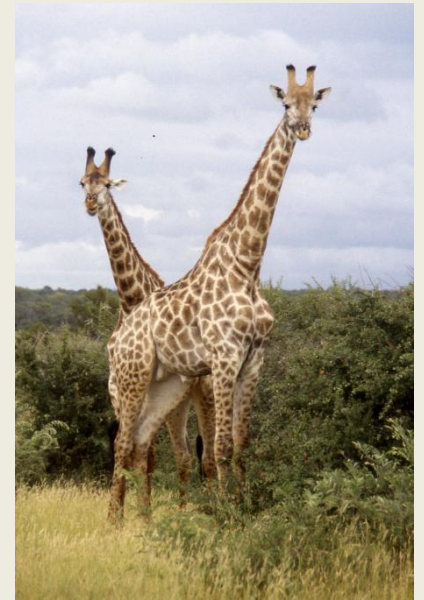
Findings: Infrastructural services including roads, electricity, telecommunications and irrigation, are all considered to be of major importance in stimulating agricultural investment and growth. However, their existence is still very limited in most rural areas of many developing countries. For road infrastructure the majority of reported impacts on agricultural productivity were positive, particularly in relation to GDP gains and poverty reduction. For electricity infrastructure, there was limited evidence but this was again positive, especially for poverty reduction. For telecommunication infrastructure, there was very limited evidence of impact but the majority were positive. The impacts for this area are most likely to be mixed in with other forms of infrastructural investment. Finally, for irrigation infrastructure, a third of all evidence related to this aspect, with the majority of impacts on agricultural productivity being positive, especially in relation to income and poverty reduction. Important gaps in knowledge on the direct impacts of investment in electricity and telecommunications infrastructure on agricultural productivity were identified. The review generated significant new aggregated data on infrastructural impacts on agricultural productivity.

Effectiveness of terrestrial protected areas in reducing biodiversity and habitat loss.

Geldmann J, Barnes M, Coad L, Craigie ID, Hockings M and Burgess M.
CEE review 10-007. Collaboration for Environmental Evidence:

www.environmentalevidence.org/SR10007.html

Findings: For species populations there is a need to make data from monitoring and management programs available, transparent, and standardised. For habitat protection, the review shows that PAs are an important element of conservation strategies to preserve tropical forests, which was the only habitat for which there was substantial evidence. However, we need to move from a simple understanding of whether PAs are effective or not to why they are effective, in order to guide PA managers and improve PA performance. One of the most important findings remains the call for systematic reporting and documentation of conservation projects, as well as the inclusion of pressures and responses in the study design of ecological experiments. This includes the need for an improved methodology for the studies of population trends, using BACI (before/ after and control/intervention) design to ensure that observed changes can be linked to the human conservation interventions and thus increase our knowledge on what can be done to halt the loss of biodiversity.



What factors determine the performance of institutional mechanisms for water resources management in developing countries in terms of delivering pro-poor outcomes and supporting sustainable economic growth?

Hepworth, N, Hooper V, Hellebrandt D., Lankford B.

CEE review 11-006. Collaboration for Environmental Evidence:

www.environmentalevidence.org/SR11006.html

Findings: The systematic map confirms that the pool of reliable knowledge from which to draw is diminutive when the exacting standards of systematic mapping are applied. Whilst the imperatives for getting WRM 'right' are intuitively strong, we currently lack the evidence to: a) confirm whether WRM institutions are performing; and b) comprehend and manage the range of factors which shape that performance. Whilst clear cut evidence for universal determinants of institutional performance is not anticipated, it is startling how little good quality research links policy and institutions to outcomes, or diagnoses the root causes of performance. The implications for international policy and practice are significant and demand an urgent response.



Assessing community-based conservation projects:

A systematic review and multilevel analysis of attitudinal, behavioural, ecological, and economic outcomes

Jeremy Brooks, Kerry Ann Waylen and Monique Borgerhoff Mulder

CEE review 09-021. Collaboration for Environmental Evidence:

www.environmentalevidence.org/SR82.html

Findings: This review supports the idea that conservation projects should be carefully designed to be effective and that some characteristics of local communities can facilitate success. That well-designed projects can prevail over disadvantages relating to the pre-existing national and local context is encouraging. As the evidence base on CBC grows, it will be useful to repeat this analysis with additional search terms, and consider additional variables related to national context to further evaluate the role of broader socio-political and economic contexts.





What have been the farm-level economic impacts of the global cultivation of GM crops?

Hall C, Knight B, Ringrose S, Knox O.

CEE review 11-002. *Collaboration for Environmental Evidence:*

www.environmentalevidence.org/SR11002.html

Findings: One of the key findings from the review is that in every case when planting GM crops as opposed to a non-GM equivalent, there was a farm-level economic impact. This was particularly notable for certain economic variables, namely gross profit and seed costs, but less significant for other economic variables such as trading price and energy costs. The change in farm level profit was least positive in the most developed countries. It is important that research continues into conducting and reviewing farm level studies, particularly as there is some suggestion that changes in farm level profit and costs that arise as a result of growing GM crops as opposed to the non-GM equivalent, change through time.

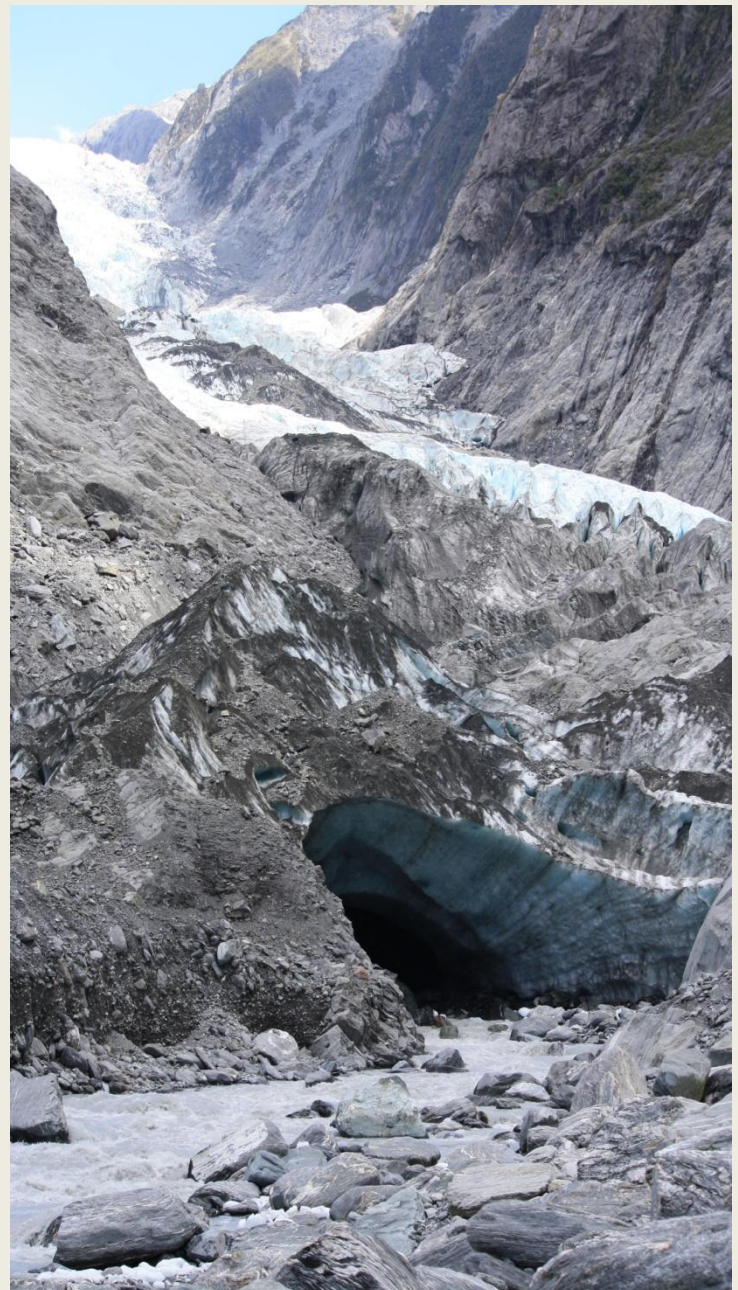
What is the evidence for glacial shrinkage across the Himalayas?

Miller J, Rees G, Warnaars T, Young G, Collins D And Shrestha A

CEE review 10-008. *Collaboration for Environmental Evidence:*

www.environmentalevidence.org/SR10008.html

Findings: Systematically reviewing the available evidence has enabled greater transparency and objectivity in the interpretation of evidence on glacier shrinkage. Too often, the rhetoric surrounding Himalayan glaciers has focused on isolated data or individual perceptions that neither provide an objective or systematic assessment of the evidence base, nor provide a true representation of physical changes. Results from the review indicate a general trend of glacial shrinkage across the Himalayan region. However, there is a lack of data from which to assess regional variation and rates of change, or provide quantitative assessments of relative changes in glacier mass. Further research should focus upon mass balance and area measurements from glaciers that have already been studied and in data sparse regions (Karakoram and Hindu-Kush), also where the threat to downstream fresh-water availability is greatest (Indus basin). Greater use of remote-sensing observations is recommended as they allow cross-border assessments and reduce the costs/difficulties in accessing such terrain. Systematic research on benchmark glaciers and standardised reporting will enable more robust analysis and provide better information for users, especially when trying to predict future impacts of climate change within the region on water resources.



ENVIRONMENTAL EVIDENCE JOURNAL



CEE's open-access journal '*Environmental Evidence*' facilitates rapid publication of systematic reviews and evidence syntheses on the effectiveness of environmental management interventions and on the impact of human activities on the environment. In partnership with BioMed Central we have put in place a business plan for the journal to establish its reputation as a leading source of evidence to inform environmental management. The founding Editorial Board provides a good indication of the global support from leading scientists.

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Since the journal does not accept primary research papers we do not expect large numbers of submissions. We aim for quality and rigour rather than volume. In 2013 the journal published five systematic reviews and 14 systematic review protocols.

Targets for 2014

Increase visibility in the field through promotion at conferences and editorial board advocacy.

Increase submissions so that we are able to publish a minimum of 2 articles per month which is required for tracking for impact factor by Thomson Reuters.

Increase visibility through press releases for relevant articles of interest- these will also be highlighted via social media channels (Twitter and BMC's facebook page) and the BioMed Central blog.

What is a Systematic Review?

It is a 'review' because:

- it compiles existing findings from the peer-reviewed scientific literature and grey literature (reports, theses...), in order to produce a synthesis of the current knowledge on a specific issue.
- it allows identification of knowledge gaps or methodological problems and thus informs future decisions in terms of research priorities, policy or management practices.

It is 'systematic' because:

- it has a clearly pre-defined methodology for the review process (set out in a 'protocol')
- this methodology conforms to published standards (see www.environmentalevidence.org/Authors.htm, for the CEE guidelines for systematic review)
- it includes structured consultation and discussion with stakeholders and experts before and during the conduct of the review
- each step must be transparent, replicable and therefore, updatable
- each decision must be explained and justified
- the conclusions of the review are informed and moderated by a systematic critical appraisal of the reliability of the methods used in each study included in the review

Are systematic reviews in environmental management different from other systematic reviews?

Systematic reviews form the basis of decision-making in the Health sector and are also used to inform Social Care and Education policy and practice. Whether using research from clinical trials, social science or field studies, systematic reviews face challenges particular to the type of primary research methods being used, or the nature of the subject, intervention, outcomes or context. Systematic reviews in environmental management face specific challenges as the number of factors affecting an observation or measurement can be large and important, especially in field studies. Randomised Controlled Trials, considered a 'gold-standard' in healthcare research of effectiveness of interventions, are not often conducted in environmental research. As a consequence, systematic reviews in environmental management face specific challenges related to the reliability of data and the variability of results. The critical appraisal stage of systematic review is therefore very important. Synthesis of data from studies with very different study designs, measurement tools and outcomes, can be challenging. CEE Methods Groups aim to develop CEE systematic review methodology in order to meet some of these challenges. If you are interested in contributing to methodology development then contact us via info@environmentalevidence.org.

The Board of Trustees

Andrew Pullin, Chair



Andrew Pullin is Professor of Evidence-Based Conservation at Bangor University, UK and Director of the Centre for Evidence-Based Conservation (CEBC, www.cebc.bangor.ac.uk), which has the goal of supporting decision making in conservation and environmental management through the production and dissemination of systematic reviews on the effectiveness of management and policy interventions. His research seeks to improve effectiveness of conservation and environmental management interventions by providing objective scientific evidence for the development of both policy and practice. He is an Editor of the journals *Environmental Evidence* and *Biological Conservation*, and an author of a textbook on *Conservation Biology*.

Teri Knight, Secretary and Treasurer

Teri Knight is a public health specialist who currently works as a Consultant in Public Health for Public Health Wales. She has a particular interest in the relationship between the natural environment, ecosystem services and human health and well-being and has been involved in developing the CEE Review Group for 'Eco-system Services, Health and Well-being', ESHWeB.



Rob Marrs



Rob Marrs is the Bulley Professor of Applied Plant Biology at the University of Liverpool. His main interests are in the fields of conservation and ecological restoration, where he tries to work out how to manipulate ecosystems towards specific endpoints. His research combines manipulative field experimentation (long-term), survey and modelling usually in British heathlands and moorlands. He is passionate about implementing conservation/restoration policy and practice based on evidence-based science.

Jennie Milward has a background in mathematics and statistics and a lifelong interest in climate and sustainability. In her current business role she is involved in reducing the organisation's impact on the environment.

Simon Gardner

Simon has more than 15 years experience in environmental regulation, and has worked extensively with a wide variety of government ministries, arms-length delivery bodies, and research councils both within the United Kingdom and across the European Union. In his current role, as Manager of the Environment Agency's Evidence Partnerships and Engagement team, his goal is to bring together the best available knowledge and expertise to develop robust, evidence-based approaches, to meeting environmental challenges.



Gerry Post

Gerald Post is one of only approximately three hundred board-certified veterinary oncologists in the United States. Dr. Post has devoted his life to animals and always had a strong interest in small animal oncology. He champions the field of comparative oncology every chance he gets. He is devoted to the concept of evidence based science, particularly as it applies to veterinary medicine and conservation biology and is incredibly proud to serve as a trustee of the Collaboration for Environmental Evidence.

More about the Collaboration

The Collaboration for Environmental Evidence was established in 2007 and is registered for charitable purposes within the UK. In line with legal requirements, the endeavors of CEE satisfy three 'charitable purposes':

- the advancement and improvement of environmental protection
- the advancement of science
- the advancement of education

and the two 'public benefit principles': the general public will benefit from more effective environment management and conservation action because those working in the environmental sector will be able to more easily access information to help them improve the effectiveness of their work. The CEE places no restrictions on who can benefit.

The CEE Constitution sets out how the CEE will operate within Charity Law. The CEE operates as a 'not-for-profit' organisation and has a Board of Trustees responsible for proper governance of the CEE, probity, adherence to regulations for 'not for profit' organisations and charity law. An Advisory Group, composed of representatives of CEE constituencies and stakeholders (e.g. voluntary or employed lay and professional practitioners, government policy makers, NGOs, industry, scientists, educators) oversees function, helping to ensure that the activities of the CEE are, as far as possible, unbiased and objective and that they remain relevant to these stakeholders. Maintenance of the CEE website, coordination of collaborative activity and general administration are functions currently provided by the Centre for Evidence-based Conservation, based at Bangor University, UK, which acts as the UK CEE Centre. As CEE activity increases through greater engagement in systematic reviews, Review Groups and Methods Groups and the establishment of CEE Centres outside of the UK, the demands placed the CEE infrastructure are also increasing. The CEE is open to all who wish to contribute to the conduct, or use, of systematic reviews and who are committed to the principle of evidence-based practice. The continued success of this 'open-access' strategy is dependent on adequate and sustainable funding of the core infrastructure. Many funding streams, such as research grants, do not fund infrastructure costs and CEE therefore seeks donations to enable it to continue to support and coordinate environmental management systematic review activity worldwide.

Potential donors are encouraged to contact us at:

info@environmentalevidence.org

THANK YOU!

The existence and growth of the CEE is due in no small part to a wide range of individuals and organisations who have actively supported its vision and aims, either through funding, giving it visibility in key arenas, through giving their time to key CEE activity, or through active involvement in systematic reviews. Particular thanks for 2013 are due to:

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