STEM Systematic Reviews What do you mean?

Presented by

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Session outline

What researchers may mean when they say they'd like to undertake a Systematic Review

Adapting methods for STEM

Our role as STEM Librarians in supporting Systematic Reviews?

STEM-focused tools and resources to support Systematic Reviews

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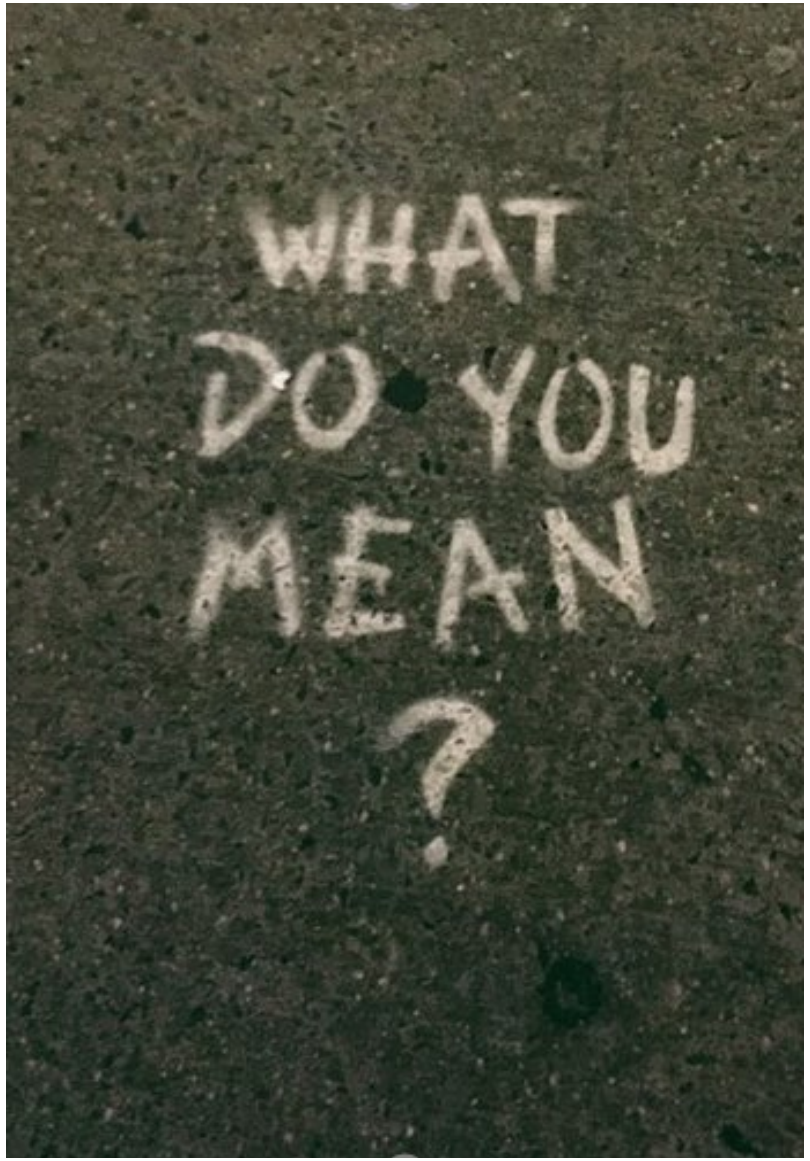
STEM Systematic Reviews



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Adapting for STEM

Do Control Interventions Effectively Reduce the Impact of European Red Foxes on Biodiversity and Agricultural Production in Australia?

(Saunders et al. 2007)

P – Population	European Red Fox
I – Intervention	Poison baiting, Shooting, & Trapping
C – Comparator	Intervention acts as control or comparator
O - Outcomes	Change in abundance of prey species after fox control operations

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What is our role as STEM Librarians in supporting systematic reviews?

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SR stages - where and how we help

1. Planning the review

Topic development, Frameworks, guidelines, protocols

Explain the review process. Discuss research question – is the question answerable through the literature? Provide information on types of other reviews. Information and guidance in selection of suitable frameworks, guidelines and protocols for reviews. Support to get the researcher started. Examples of similar systematic reviews, for discussion of methods.

2.Searching for studies

Search strategy, database selection, search translation

Search strategy advice. Provide search planner to document and adapt search plan as required. Review search strings. Assistance with database selection and search translation between databases.

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Adapted from Justin Clark's presentation on SR (Bond University)

Where and how we help

3. Selecting and assessing studies to review

Screening: abstract & full text stages, critical appraisal

Screening for the process of identifying studies from lit review for inclusion in review. Recommend tools and training materials Provide support with EndNote import and exports. Support in getting started with Covidence.

4. Extracting data from studies

Create database of findings, input data

Minimal involvement at this stage, other than to suggest appropriate resources.

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Where and how we help

5. Synthesize data from studies

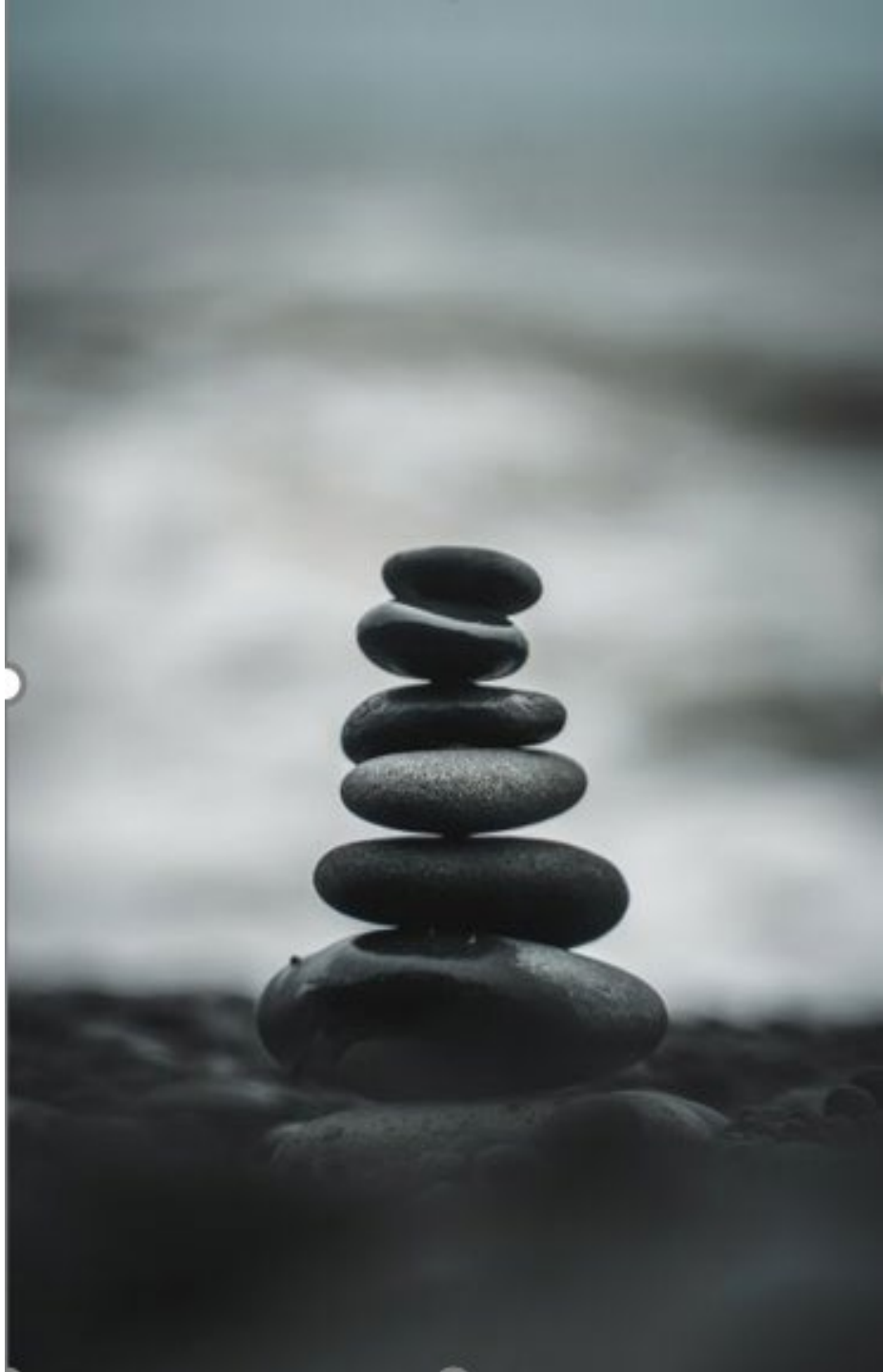
Produce summary tables, identify and map patterns

Minimal involvement at this stage, other than to suggest appropriate resources.

6. Writing and publishing

Reporting standards, publishing plan

May assist with identifying suitable journals to publish in, although this will have likely have been established during the planning or protocol phase.



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Our role in STEM Systematic Reviews

General guidance on SRs and other reviews.

Resources/tools/training to get researchers started.

SR search planner.

Search strategies, search strings, test searches.

Database selection, search translation.

PD and knowledge building for STEM SRs.

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Tools and resources

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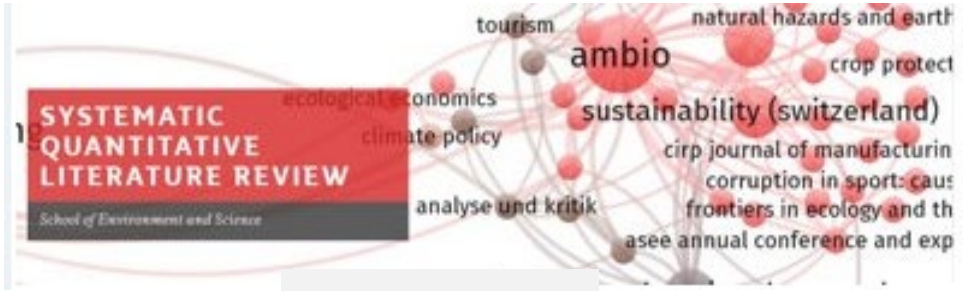
Griffith Method

The Griffith method – a simple 15 step process for conducting a systematic quantitative review. No protocols or reporting standards are required as part of the basic method. Publication by Pickering & Byrne outlines this method.



Griffith UNIVERSITY
Queensland, Australia

Images from Griffith University Website

Use for: General understanding of SR methodology, planning, how to create and structure a review database, data synthesis info and tips on how to write the actual review.

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ROSES

ROSES – (**RepOrting standards for Systematic Evidence Syntheses)** was created specifically for the environmental science/ecology field, to address shortcomings of PRISMA for this field. Includes guidelines for reporting and templates for flow diagrams, as well as an online tool to create a flow diagram.

Use for: Guidelines, protocol, flow diagram reporting

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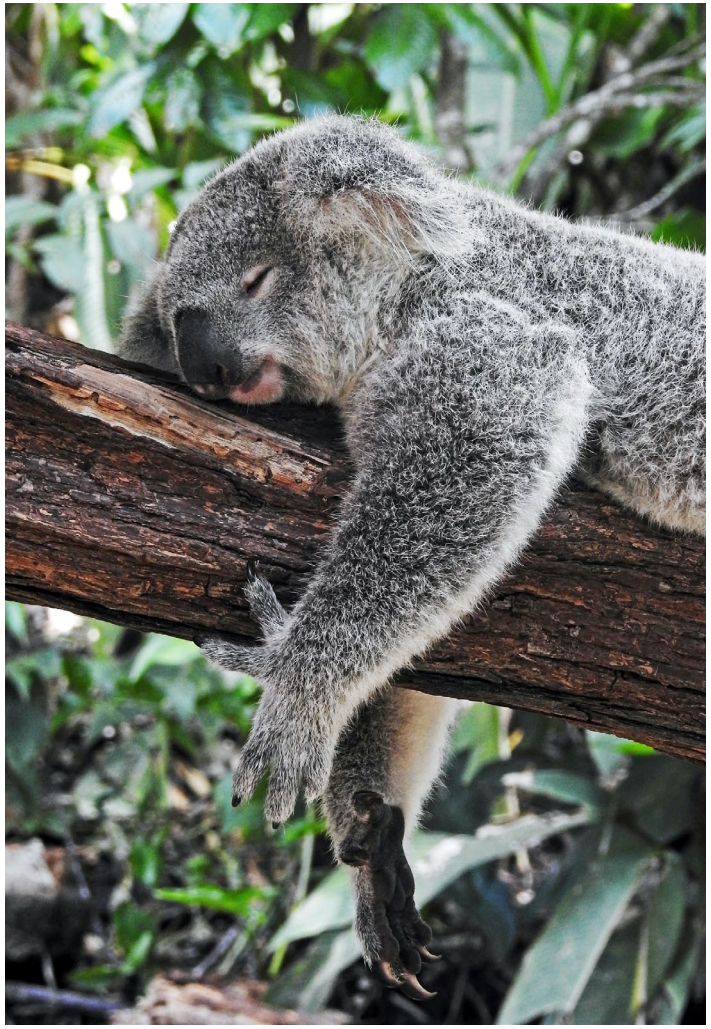
Collaboration for Environmental Evidence (CEE)

CEE (Collaboration for Environmental Evidence)

A community that seeks to promote, deliver and publish environmental evidence syntheses. Offers guidelines for systematic reviews in environmental management field. Mandates the use of ROSES for CEE approved evidence synthesis.

Use for: Guidelines, protocol and protocol registry, screening guidelines, critical appraisal guidelines or the Critical Appraisal Tool Prototype, Guidelines for Data Coding and Data extraction, Guidelines for data synthesis, and Interpreting findings and reporting conduct



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Other resources to investigate…

PRISMA:

The seminal resource for conducting a 'traditional' Systematic Review. Depending on Topic, can be used for STEM Systematic Reviews, especially those with a health-related topic. Includes PRISMA Statement , checklist and flow diagram and PRISMA-P protocol

Other Protocol Registries:

Research Registry

Open Science Framework – see 'registrations' section

Search/Discovery Tools:

Citation mapping: Used to visualize research network and find new connections. Lots of tools available such as VOSViewer, Scite and Citation Gecko

Research Rabbit: AI powered discovery tool using seed articles. Limited availability as in beta.

Systematic Review Accelerator by Bond University includes a Word Frequency Analyzer tool and a Search Refiner to test the strength of a search string that works if the topic is searchable in PubMed.

Screening Stage:

Reference Management Software (Zotero trending among STEM researchers) – export searches to library and create groups to screen citations against inclusion and exclusion criteria. Also use to identify and remove duplicates

Covidence - Software that streamlines the production of systematic reviews, designed for health discipline but works for most STEM reviews. Allows importing of citations, management of screening by multiple reviewers, data extraction and data export.

CADIMA – Free software in trial phase, developed by CEE and Julius Kühn Institute (though not required for CEE approved reviews)

Abstrackr - From Brown University's Center for Evidence Synthesis in Health (CeSH). Free, open source software for (semi-automated) abstract screening for systematic reviews. Allows for collaborative screening of abstracts

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Questions

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References

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Saunders G, Mcleod L and Kabat T (2007) 'Do control interventions effectively reduce the impact of European Red Foxes in Australia? CEE protocol 06-003 (SR24)', *Collaboration for Environmental Evidence*.

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