IUFRO-SPDC Training on Systematic Review in Forest Science
Pietermaritzburg, South Africa, 15-17 July 2017 Report by Gillian Petrokofsky, University of Oxford & IUFRO
Workshop participants in South Africa came from 12 countries.
SPECIAL PROGRAMME FOR DEVELOPMENT OF CAPACITIES (SPDC)

“To expand and foster forest research capacity in economically disadvantaged countries in Africa, Asia and Latin America”
ABOUT IUFRO

• IUFRO is the only network with a global scope for cooperation in forest science.

• The IUFRO network unites more than 15,000 scientists in about 650 Member Organizations in 126 countries.

• IUFRO is a member of the International Council for Science (ICSU) and cooperates with scientific networks in related fields (e.g. European Geosciences Union, etc.).
Interaction with Society

“Working effectively at the interface of forest science and forest policy”

SPDC

Scientific Competence

Preparing and Writing Research Proposals

“Communicating forest research – Making science work for policy and management”

Systematic Review in Forest Science

Research Methods
Workshop aims

• The workshop introduces participants to systematic review as a powerful tool in evidence synthesis.

• The tool is used to improve decision-making and any policy formulation that draws on scientific evidence. This workshop will draw on best practice guidance and existing systematic reviews to make progress on a current priority.

• Participants will work in small groups to develop mini-protocols for conducting systematic reviews on topics of interest to individual groups.

• Participants will learn how to apply some of the elements used in a systematic review to make their own work (not just future systematic reviews) more robust and reliable.

• An important feature of the workshop is that it will proceed in an open, collaborative environment with shared learning and peer-to-peer support.

• Active participation helps build confidence in applying the techniques of systematic review and simulates the work of a real systematic review team in action.
What is true? What constitutes ‘evidence’

A Hierarchy of Evidence

- What studies did you choose? Why?
- What studies did you NOT choose? Why?
- How reliable are the studies you chose?
1. Question framing
   • Policy-relevance
   • Involves stakeholders
   • Define what is to be examined and how

2. Rigorous review methodology
   • Comprehensive
   • Transparent
   • Repeatable

3. Engage wider community with findings
   • Policy makers
   • Academics
   • Stakeholders

Policy-relevant question
Systematic evaluation of evidence
Active dissemination of results
Commitment to update

Source: Petrokofsky et al. 2010
Does Participatory Forest Management better helps to meet conservation goals in Sub-Saharan Africa?

Presented by Conservation Management Group
Does Assisted Natural Regeneration Of Degraded Miombo Woodlands Improve Biodiversity And Livelihoods?
CAN REDD+ IMPLEMENTATION LEAD TO IMPROVED COMMUNITY LIVELIHOOD AND CLIMATE CHANGE MITIGATION IN SUB-SAHARAN AFRICA?

Bakengesa S., Augustino A., Amoako J., Kayumba I. and Mavaringana M.

A protocol presented at IUFRO-SPDC Workshop on Systematic Review in Forest Science.
Ascot Inn, Pietermaritzburg, South Africa.
17/7/2017.
The efficacy of biological control agents of *Leptocybe invasa* and *Mycosphaerella* leaf disease (MLD) of eucalypts in Sub-saharan Africa: a mini-protocol
Protocols often use a Conceptual framework – example from REDD group
Method 1. Transparent, extensive search strategy
“PICO” Framework
example from Miombo group

<table>
<thead>
<tr>
<th>Population</th>
<th>Degraded Miombo woodland – additional keywords: savanna, dry land, forests, Angola, Mozambique, Namibia, Botswana, Zambia, Democratic Republic of Congo, Tanzania, Malawi, Nyasaland, Northern Rhodesia, Zimbabwe, Southern Rhodesia, Zaire, Tanganyika, Brachystegia, Julbernadia, Isoberlinia,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>assisted natural regeneration</td>
</tr>
<tr>
<td>Control</td>
<td>without assisted natural regeneration</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Biodiversity, livelihood, income, species richness, species abundance, density of trees, seedlings, saplings, dominance, wood biomass</td>
</tr>
</tbody>
</table>
Method: Step 2: Looking for reference using the criteria from the PICO

Google Scholar → Harzings Perish or Published → 998 references extracted

CABI → 4500 references extracted

Mendeley → 35 references

Selected for exclusion and inclusion criteria → 20 references

Inclusion and Exclusion

Title
Review: 20; Removed: 5; for next step: 15
K: -0.85

Abstract
Review: 15; Removed: 9; for next step: 6
K: 0.4 and K: 0.16

Critical appraisal
Review: ; Removed: ; for next step:

Example from Conservation group
3. Sources:
CAB Direct (1024)
Google Scholar (502)

4. Inclusion criteria
• Literature was captured, duplicates were removed.
• All 3 authors reviewed a random sample of 20 papers: based on relevance of title
• Kappa analysis was done for all 3 reviewer combinations
• If Kappa was lower than 0.6, reviewers discussed discrepancies with help of external consultant (Gill😊) and came to an agreement
• Criteria: relevant exposure and population

Methods – example from Forest Health Group
## Consistency of reviewers: using kappa statistic

### Inter-rater agreements

<table>
<thead>
<tr>
<th></th>
<th>ben/rose</th>
<th></th>
<th>rose/herb</th>
<th></th>
<th>ben/herb</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>no</td>
<td>total</td>
<td>yes</td>
<td>no</td>
<td>total</td>
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<tr>
<td>yes</td>
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<td>9</td>
<td>11</td>
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<td>0</td>
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<table>
<thead>
<tr>
<th></th>
<th>total</th>
<th></th>
<th>total</th>
<th></th>
<th>total</th>
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<tbody>
<tr>
<td></td>
<td>0.1</td>
<td>0.85</td>
<td>0.55</td>
<td>0.45</td>
<td>0.1</td>
<td>0.9</td>
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</tbody>
</table>

**K** = 0.26  
**K** = 0.18  
**K** = 0  

ICFR2017
## Critical appraisal of included studies – REDD group example set

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Variables</th>
<th>Reliability</th>
<th>Internal Validity</th>
<th>External Validity</th>
<th>Replicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Zambia)</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2 (Ongolo)</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3 (Ghana by Hansen)</td>
<td></td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4 (Ghana by Jonathan)</td>
<td></td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5 Jindal et al</td>
<td></td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Another useful information resource a IUFRO initiative:

GLOBAL FOREST INFORMATION SERVICE (GFIS)

• GFIS promotes the dissemination and sharing of forest-related information.

• Information providers share news, events, publications, projects, job vacancies, datasets and databases.

• GFIS allows forest related organizations to promote their information globally with virtually no investment.

GFIS.net
Effectiveness: cost & resources implications of evaluation methods

If evidence-informed policy works in practice, does it matter if it doesn't work in theory? Chalmers (2005)

<table>
<thead>
<tr>
<th>Cost</th>
<th>Effectiveness</th>
<th>Action</th>
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<tr>
<td>low</td>
<td>reject</td>
<td></td>
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<td>reject</td>
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</tr>
<tr>
<td>high</td>
<td>adopt</td>
<td></td>
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</tbody>
</table>

“We can’t avoid the fact that reviews need to be properly resourced”

“It is true that the process can be time consuming”

from 7 myths about systematic reviews and why we need to move on

http://www.alliance4useful evidence.org/
What can you do with the outputs?
Systematic map of evidence
Mining the systematic map
HOW TO GET INVOLVED: www.iufro.org

• Visit the IUFRO website and DISCOVER IUFRO
• Find IUFRO units under SCIENCE IN IUFRO
• Get in touch with unit coordinators
• Find out WHO IS WHO in IUFRO
• Contact officeholders and IUFRO Headquarters
• Find IUFRO co-sponsored EVENTS
• Plan to participate in IUFRO activities
• Don’t miss the 25th IUFRO World Congress and
• Come to Curitiba, Brazil, in September 2019
• Get NEWS FROM THE NETWORK and
• Become a PART OF IT!
Siyabonga kakhulu