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International Peatlands Workshop

Enhancing Evidence-Based Policy by Developing
Core Common Outcomes and Collaborations for
Peatland Research and Monitoring

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Preliminary Workshop Report

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*Mark Reed, Dylan Young and Gavin Stewart
Newcastle University*

Summary

Tropical peatland experts from around the world gathered in Indonesia recently for a 2-day workshop to discuss how the scientific and practitioner community might be able to collect data to better support evidence-based policy. Their aim was to find a way to standardise the collection of environmental data so that the outputs of multiple studies can be combined into useful syntheses. After testing the approach for peatlands in the UK, the workshop focussed on tropical peatlands as part of the UN Global Peatland Initiative.

A pre-workshop survey was used to identify the groups of important measures (i.e. what do we want to know about?), and their associated variables (i.e. what do we want to measure?). The groups are known as the outcome sets and the variables as outcome measures. During workshop deliberation the sets and their associated outcome measures were reviewed and amended to provide a comprehensive list of outcomes that could be measured in tropical peatlands across carbon, biodiversity and hydrology (the proposed core areas). Workshop participants also identified three policy objectives relevant to tropical peatlands (1. climate mitigation, 2. social and economic, and sustainable management, and 3. protection and restoration). These will be used in a post-workshop multi-criteria analysis to identify the most important (core) outcome sets and their related outcome measures.

The ultimate goal is to extend the approach across all types of peatland internationally to identify the outcome sets and measures, along with associated best practice methods and reporting standards. It is hoped that researchers and monitoring initiatives will increasingly choose to collect data on these core outcomes, increasing the proportion of data that can be integrated in evidence syntheses and meta-analyses. In this way, it should be possible to generate more robust evidence to guide peatland policy and practice internationally.

Introduction

Tropical peatland experts from around the world gathered in Indonesia on 10th to 11th July 2019 to discuss how the scientific community might be able to collect data that can better support evidence-based policy. Their aim was to find a way to standardise the collection of environmental data so it can be combined from multiple studies and sites to better inform policy and practice. After previously testing the approach for UK peatlands, the workshop focussed on tropical peatlands as part of the UN Global Peatland Initiative. If successful, the goal is to extend the approach across all types of peatland internationally to identify the most important (“core”) variables (“outcome measures”) that should be measured in tropical peatlands, with associated best practice methods and reporting standards. It is hoped that researchers and monitoring initiatives will increasingly choose to collect data on these core outcomes, increasing the proportion of data that can be integrated in evidence syntheses and meta-analyses.

The challenge

Despite a growing research base, decisions in peatland policy and practice are often constrained by a lack of evidence. It can be difficult to directly compare policy options because researchers have evaluated each option in different ways (e.g. whether an option enhances biodiversity or mitigates climate change). It is also difficult to combine insights from different studies about the same issue when studies measure different outcomes in different ways, and do not fully or consistently report the data. As a result, many decisions in policy and practice are informed by the results of individual studies, which are often later contradicted by the findings of subsequent research.

For these and other reasons, a large proportion of research (estimated at 85% in the field of health; Yordanov *et al.*, 2018; Glasziou and Chalmers, 2018) is never used in practice, or cannot be applied beyond the narrow context in which the data was collected. These problems are recognised in conservation science as well as more widely (Gurevitch *et al.*, 2018). They are a particular challenge for international programmes like the United Nations’ Global Peatland Initiative, which is preparing the world’s first Global Peatland Assessment.

The proposed approach

One way to increase the amount of synthesisable evidence for use in policy and practice is to reduce inconsistencies in the outcomes that are measured and reported in individual studies on any given topic. Although in some cases, methodological variation may be justified based on the objectives of the research or the resources available. However, if different research projects investigating the same topic measure different variables in different ways (e.g. on different scales with different statistical properties), it can be very difficult to integrate findings across studies, often resulting in unjustified research waste.

Agreeing what to measure is being addressed in the medicine by establishing communities of practice which measure and report a standardised set of outcomes (e.g. Outcome Measures in Rheumatology - omeract.org). These “core outcome sets” provide an agreed standardised collection of outcomes for measuring and reporting for a specific area of research. For example, the Core Outcome Measures in Effectiveness Trials (COMET) initiative brought researchers together to agree standardised sets of outcomes that should be measured for research in specific fields of medicine.

Core common outcome sets define the minimum number of outcomes that should be measured in a study of a specific condition. Standardisation need not stifle innovation (Clarke, 2007) as researchers frequently measure additional study specific outcomes in addition to either mandatory or desirable core outcomes. They have become well established in some communities of practice but remain rare in others (Gargon *et al.*, 2014). The same problem was recognised in global forestry research and led to the establishment of RAINFOR (Malhi *et al.*, 2002) and ForestPlots.net (Lopez-Gonzalez *et al.*, 2011) where methods harmonisation and agreement of outcome measures has enabled important global syntheses. Similar approaches have been advocated for standardisation of population data to inform IUCN red listing and there have been repeated pleas for standardised reporting of the costs of conservation interventions to facilitate decision analysis (Gurevitch *et al.*, 2018). However thus far, a formalised approach to developing core common outcomes in ecology has not been attempted.

The COMET approach was adapted for use in tropical peatlands, through the following methodological steps:

1. **Pilot:** each of the following steps were piloted with a group of peatland researchers, policy-makers and practitioners in the UK. This led to a number of refinements, notably the addition of criterion-based expert selection and an exercise to elicit and prioritise criteria during the workshop, against which outcome criteria are evaluated in the round 2 survey.
2. **Expert identification** through citation analysis combined with snowball sampling (Goodman, 1961) from key experts in the field. Citation analysis was conducted using the SciVal tool (www.scival.com) to identify currently active (last 5 years) tropical peatland researchers, based on number of tropical peatland publications, the proportion of these in top journals, and the number of outputs in the top 10% (field-weighted) of most cited papers in their field. Snowball sampling started with key experts already working with the Global Peatland Initiative, who were asked to suggest other experts in the field, and by taking recommendation for additional experts from those identified via citation analysis. Based on this, a total of 30 individuals were invited to participate in a workshop and a pre-workshop survey.
3. **Pre-workshop identification of preliminary outcome sets and outcome measures:** the Delphi approach (Mead and Moseley, 2001) was used to conduct a two-part expert survey, seeking consensus on core common outcomes. In the first part, experts were asked to identify outcome sets and associated measures relevant to tropical peatlands in three core areas (carbon, hydrology and biodiversity). The survey was limited to biophysical outcomes, given the more significant challenges

around identifying outcome measures in socio-cultural and economic domains. Respondents were also asked to identify any existing core outcome sets (or initiatives to do this) for tropical peatlands, and potential uses for core common outcome sets arising from the workshop.

4. **Deliberation over outcome sets and outcome measures:** a workshop was hosted by the International Tropical Peatland Centre in Bogor, Indonesia, in collaboration with the Global Peatland Initiative and CIFOR. Participants were selected to cover each major tropical peatland region, with a particular focus on the four Global Peatland Initiative countries (Indonesia, Peru, Republic of Congo and the Democratic Republic of the Congo), although Congolese participants were unable to join at short notice. The results of the round 1 Delphi survey were presented to participants, after which they were asked to review and amend the domains within which outcomes might be defined in tropical peatlands (“the outcome sets”) – this is to address the question “what do we want to know about?”- by building on the draft sets identified from the survey.

Next, participants discussed each of the outcome measures identified under each outcome set, adding and amending outcome measures based on the discussion. No outcome measures were deleted at this stage. This was done with the full group for carbon-related outcome measures. Hydrology and biodiversity outcomes were evaluated in parallel with participants self-selecting the group they contributed towards based on their expertise. Finally, policy objectives were identified that could be used to evaluate the relative importance of each outcome measure in the subsequent prioritization exercise (see step 6 below). This was done via a metaplan with five post-its per person, clustered by similarity, with three key objectives identified via a sticky-dot prioritization (Reed, 2018). A final session of the workshop was dedicated to stimulation of new collaborations between participants.

5. **Post-workshop extension of expert group:** this will be done via further citation analysis, lowering the threshold for inclusion, and further snowball sampling on the basis of recommendations from workshop participants and those who responded to the round 1 survey.
6. **Post-workshop prioritization of core outcomes:** Feedback on outcome sets and outcome measures from the workshop will be incorporated into a final list, which will form the basis for a post-workshop Delphi survey seeking consensus on the most important (“core”) outcomes. Given addition of new experts to the group (step 5), there will be an option to suggest additional missing outcomes. If any additional outcomes are identified in this way, these will be collated and sent to participants in a short follow-up survey to evaluate them. Responses will be analysed to identify outcome sets and measures that are likely to be of particular relevance for research and monitoring in any of the three policy domains (represented by the three evaluation criteria).
7. **Measurement methods:** depending on the success of the previous steps, it is proposed that working groups (virtual or face-to-face, depending on funding) are

established to identify best practice methods for measuring each outcome. It is proposed that methods will be identified that range from highly accurate (but potentially time-consuming, costly and requiring high levels of expertise) to proxy methods (which may be less accurate but may be more feasible for those with limited resources and expertise).

8. **Reporting protocols:** finally, if previous steps are conducted successfully, a further working group will be established to discuss the standardisation of tropical peatland open data reporting, potentially building on the work of PeatDataHub (peatdatahub.net).

The methodology above is designed around the following questions, summarised in Figure 1:

- What is the scope – what do we want to know about tropical peatlands? What are the domains (sets) within which we might define outcomes in tropical peatlands?
- What outcomes (variables) should be measured in a tropical peatland?
- Which of these outcomes measures (variables) are the most important to measure (core outcome sets)?
- How should each outcome (variable) be measured?
- How should the data be reported?

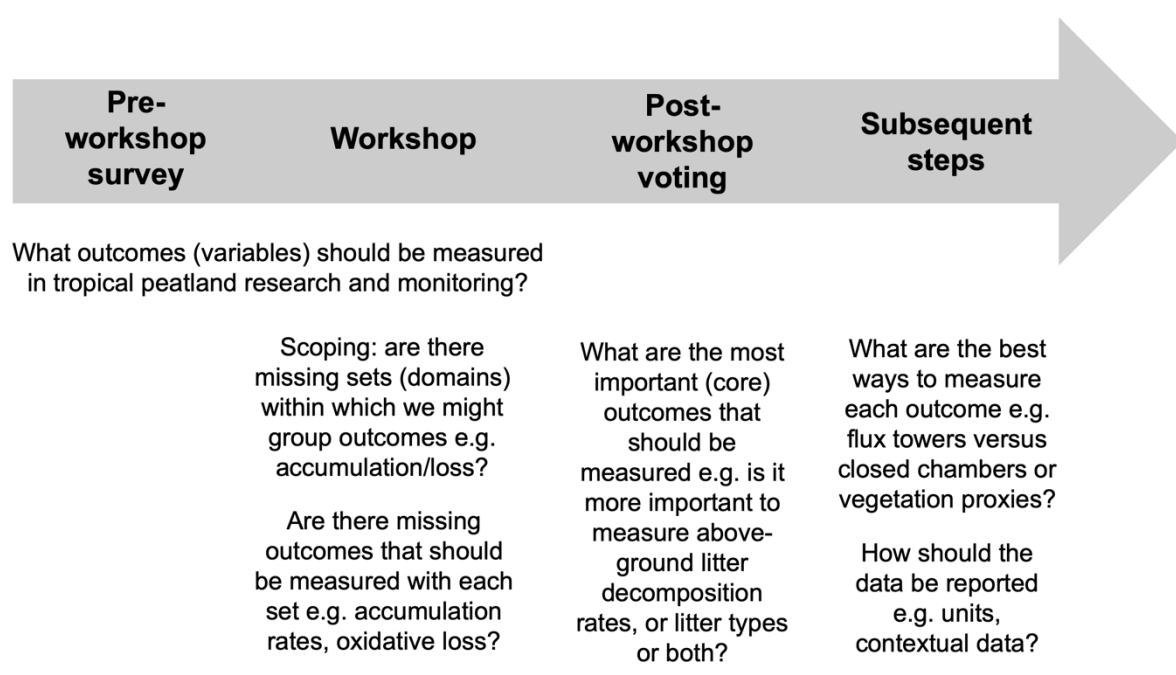


Figure 1: Methodological framework for agreeing core common outcomes for tropical peatlands.



Figure 2 (clockwise from top left): Haruni Krisnawati from the International Tropical Peatland Centre opening the workshop; Mark Reed facilitating; participants prioritising policy objectives; and deliberation over outcome measures.

Results

Workshop data is currently being analysed, and steps 5-9 are currently ongoing or tentatively planned. However, it is possible to summarise the round 1 survey results, and some of the key findings from the workshop at this stage.

Round 1 survey (pre-workshop) outputs

- >130 potential outcome measures.
- >60 outcomes for carbon storage and release in 10 groups (outcome sets)
- >30 outcomes for hydrology in 4 outcome sets
- >40 outcomes for biodiversity in 3 outcome sets

Workshop deliberation

Deliberation over outcomes sets at the workshop led to the inclusion of additional outcome sets in the areas of carbon (2), biodiversity (4) and hydrology (1). These included, for

example the addition of a spatial set in carbon to include outcome measures related to peatland mapping, and the subdivision of fauna and flora into aquatic, above and below-ground sets of outcome measures.

Deliberation does not require participants to remove measures, which is done in the post-workshop prioritisation process. However, a number of existing outcome measures were altered and new ones added. In some cases, this involved the duplication of outcomes across multiple sets, where outcomes were relevant in more than one context. Contextual variables were identified across all outcome sets, to denote variables that should be measured in all studies to enable effective interpretation and synthesis (e.g. location, altitude, precipitation, land cover and land use history).

Three policy objectives were prioritised as being relevant across all tropical peatlands, out of an initial clustering of seven objectives. All except peatland mapping received strong support from delegates. After discussion, it was agreed that mapping was unlikely to be a policy objective in most tropical peatlands, unless a lack of adequate maps prevented other policy objectives from being achieved. In most other contexts, mapping was considered to be one of a number of steps towards preventing peatland degradation or enabling restoration. These latter two objectives were integrated as two aspects of the same policy objective - to sustainably manage, protect and restore peatlands. Livelihoods and food security objectives were grouped together as socio-economic policy objectives, and climate mitigation was prioritised as the third key policy objective. In summary, the three policy objectives prioritised by the group were:

- Climate mitigation
- Sustainable management, protection and restoration
- Social and economic

These objectives will be used as criteria in the post-workshop survey to prioritise outcome measures and sets, ensuring that peatland research and monitoring is socially relevant and providing guidance to those selecting outcome measures for their work.

Next steps

The following next steps were agreed by workshop participants:

1. Preliminary workshop report (this document)
2. Extension of the expert group through recommendations from workshop participants
3. Administration and subsequent analysis of post-workshop survey
4. Full workshop report
5. Paper for *Conservation Biology* (workshop participants were invited to contact Dr Gavin Stewart at Newcastle University, who will be lead author, to discuss co-authorship, which will be on the basis of contribution to the writing of the article)
6. Workshop manual to enable further replication of workshop and survey process to other peatlands internationally
7. Possible working groups on best practice methods and reporting standards, depending on outcomes from previous steps of the process

Workshop documents

The following documents from the workshop can be requested from Mark Reed (mark.reed@newcastle.ac.uk). These include;

1. Pre-workshop survey.
2. Workshop agenda.
3. Outcomes from the collaboration session held immediately after the core outcomes sessions.

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