

Palaeo50: The priority research questions in paleoecology

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Paleoecological studies provide insights into ecological and evolutionary processes, and help to improve our understanding of past ecosystems and human interactions with the environment. But paleoecologists are often challenged when it comes to processing, presenting and applying their data to improve ecological understanding and inform management decisions (e.g. Froyd and Willis 2008) in a broader context. Participatory exercises in, for example, conservation, plant science, ecology, and marine policy, have developed as an effective and inclusive way to identify key questions and emerging issues in science and policy (Sutherland et al. 2011). With this in mind, we organized the first priority questions exercise in paleoecology with the goal of identifying 50 priority questions to guide the future research agenda of the paleoecology community.

The workshop was held at the Biodiversity Institute of the University of Oxford. Participants included invited experts and selected applicants from an open call. Key funding bodies and stakeholders were also represented at the workshop, including the US NSF, IGBP PAGES, UK NERC, and UK Natural England.

Several months prior to the workshop, suggestions for priority questions had been invited from the wider community via list-servers, mailing lists, society newsletters, and social media, particularly Twitter (@Palaeo50). By the end of October 2012, over 900 questions had been submitted from almost 130 individuals and research groups. Questions were then coded and checked for duplication and meaning, and similar questions were merged. The remaining 800 questions were re-distributed to those who had initially engaged in the process. Participants were asked to vote on their top 50 priority questions.

At the end of November the questions were grouped into 50+ categories, which in turn were allocated to one of six workshop themes to be chaired by an expert: Human-environment interactions in the Anthropocene (Erle Ellis, University

of Maryland, USA); Biodiversity, conservation and novel ecosystems (Lindsey Gillson, University of Capetown, South Africa), Biodiversity over long time scales (Kathy Willis, University of Oxford, UK), Ecosystems and biogeochemical cycles (Ed Johnson, University of Calgary, Canada), Quantitative and Qualitative reconstructions (Stephen Juggins, University of Newcastle, UK), and Approaches to paleoecology (John Birks, University of Bergen, Norway).

Each working group also had a co-chair, responsible for recording votes and editing questions on a spreadsheet, and a scribe. Workshop participants were allocated into one of six parallel working groups tasked with reducing the number of questions from 180 to 30 by the end of day one. This was an intensive process involving considerable debate and editing. During day two, these 30 questions were winnowed down further with each group arriving at seven priority questions. The seven questions from each group were then combined to obtain 42 priority questions. Each working group had a further five reserve questions, which everyone voted on in the final

plenary. The eight reserve questions that obtained the most votes were selected to complete the list of 50 priority questions.

Working group discussions were often heated and passionate. Compromises won by the chairs and co-chairs were difficult but necessary. It is important that the final 50 priority questions are not seen as a definitive list, but as a starting point for future dialogue and research ideas.

The final list of 50 priority questions and full details of the methodology is currently under review, and the publication will be announced through the PAGES network.

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References

- Froyd CA, Willis KJ (2008) *Quaternary Science Reviews* 27: 1723-1732
Sutherland WJ et al. (2011) *Methods in Ecology and Evolution* 2: 238-247

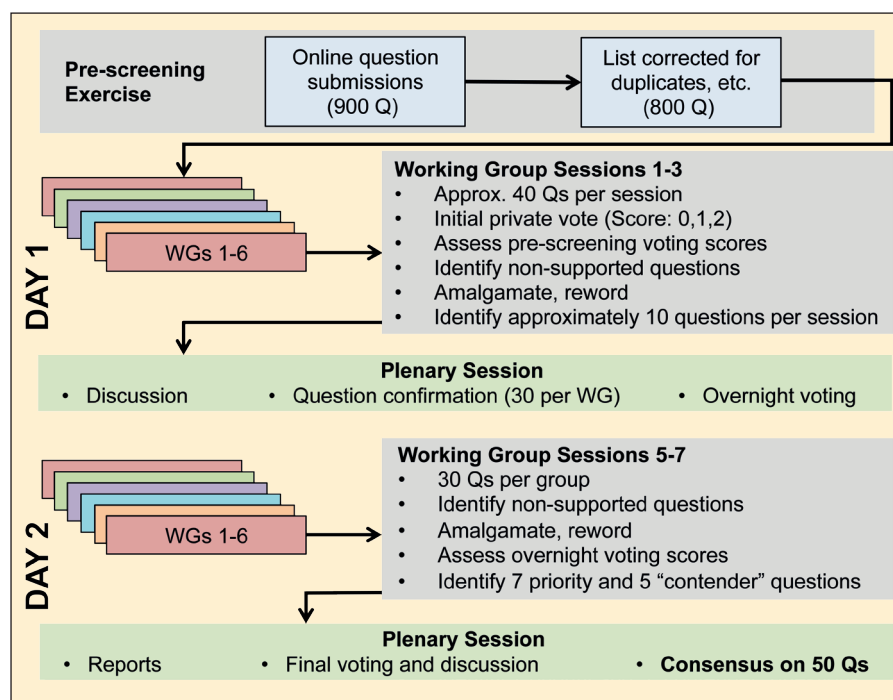


Figure 1: Flowchart of the selection process for the 50 priority research questions.

