

EDITORIAL

Open Quaternary: A New, Open Access Journal for Quaternary Research

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The ideological case for open access to the results of publicly funded research is well established (e.g. Epstein 2012, Finch 2012, Fister 2012, Jha 2012, Monbiot 2011, Yiotis 2005): it ensures transparency of data and research, and provides social and economic benefits through increased knowledge and technology transfer.

For Quaternary research, open access to research outputs is of paramount importance. Our data and findings are well-known to provide a vital 'bridge' between deep time and the present. Palaeontological, biological, geological and archaeological data facilitate the usefulness of research at all timescales in order to address human-scale problems such as climate change, biodiversity loss and natural hazards. Furthermore, the high resolution of Quaternary datasets make them ideal for addressing these issues directly, elucidating the natural and cultural processes that continue to shape our world and enhancing our ability to predict and prepare for future change. The value of Quaternary research to other academics, policy makers and the lay public is clear, and open access publication removes barriers to our research outputs, facilitating dissemination, encouraging multidisciplinary use and enhancing impact (Wagner 2010). With the rise of the open access mega-journal, a specialist open access journal for the Quaternary provides a place where the field can build a strong and coherent research agenda, while also improving access to, and highlighting the value of, our research.

Open Quaternary is the first 100% gold open access specialist journal for Quaternary research, and a grass-roots response amongst Quaternary scientists to the dearth of affordable open access options within our field. The publication of our first set of peer-reviewed academic papers marks the end of two years of planning and development, and heralds the start of what we hope will be a new era for academic publishing in Quaternary research.

Open Quaternary not only offers a high-quality, low-cost platform for the communication of academic research in its own right, it also provides the necessary competition to drive down article processing costs in established Quaternary journals.

The breadth of Quaternary research is its strength, encompassing everything from archaeological investigations of human culture, ancient and recent population genetics, evolutionary biology, climate change, physical geography and geophysics. *Open Quaternary* embraces all aspects of Quaternary research, welcoming papers from all disciplines. Our first set of published papers reflect this diversity of research, encompassing a large-scale meta-analysis of palaeoecological trends (Goring *et al.* 2015), fine-scale methodological analysis in zooarchaeology (Greenfield *et al.* 2015), and a palaeogenetic study assessing the demographic change through time of a single species (Ersmark *et al.* 2015).

Goring *et al.* introduce an R package, *neotoma*, that provides an interface between the Neotoma database (a large-scale, vetted database of palaeoecological records dating from the Pliocene-Holocene) and other R statistical packages. Their paper not only describes *neotoma* functionality, it also provides worked examples to highlight its potential applications for new users interested in meta-analytical approaches to ecological change over time, and for modelling species-level response to climate change.

A second methodological paper by Greenfield *et al.* introduces a new technique for zooarchaeological research: a digitally automated tool to estimate age and season of death in wild equids from cementum bands in tooth thin-sections. The authors compare their new method with traditional manual counting of cementum bands and the resulting interpretations of age and season of death, and find that the digitally automated method is both more efficient and more precise than existing approaches.

Finally, Ersmark *et al.* use new ancient DNA data to confirm that the cave lion, *Panthera spelaea* (Goldfuss, 1810), went through a demographic bottleneck, with a loss of both genetic diversity and population size, ca. 47ka before the arrival of modern humans into their range. The cave lion population did not recover in numbers until shortly before their extinction 18ka.

We believe that these papers demonstrate the potential of *Open Quaternary* as a journal that has much to offer its authors as well as its readers, from hosting a

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large number of high quality images to publishing programming code in order to encourage the widest possible dissemination.

At *Open Quaternary*, we also recognize that removing barriers to academic publishing is only half the battle in achieving wider research impact. We feel strongly that Quaternary research and data have relevance to the global community, and we actively encourage public engagement and data sharing as valuable components of the research agenda. This is why, alongside our standard research and methods papers, we have introduced two further paper categories: data papers (for the publication of annotated Quaternary datasets), and engagement papers (for the sharing of case studies and research into public engagement with Quaternary research). We are delighted to have already received submissions to both these categories, and keenly anticipate future submissions papers. As it has been shown that online coverage of academic publications increases abstract views and downloads (McKenzie & Öztler 2011), we also run the blog *OpenQuaternary Discussions* (<https://openquaternary.wordpress.com>), providing a platform for our authors to write accessible summaries of their research for an online audience.

Finally, at *Open Quaternary* we are concerned about diversity issues in science. Although the benefits of double-blind review are controversial (see Budding *et al.* 2008, and Webb *et al.* 2008), we recognize the damaging nature of both real and perceived reviewer bias that may discourage women and researchers from non-anglophone and minority groups from submitting their research for publication. To encourage submissions from these underrepresented groups, we are experimenting with a double-blind review policy. At the same time, our commitment to transparent practice means that we invite reviewers to disclose their names to authors on completion of their review.

Across the globe, there is a clear government commitment to making publically funded research freely available, with explicit policies in place at the European Science Foundation, the USA's National Science Foundation and at Research Councils UK. Open access papers have a mean citation advantage of 96% (Hajjem *et al.* 2005, in Wagner 2010). Combined with effective public engagement, open access research is likely to have increased impact – benefitting the field and individual researchers alike. We very much hope that *Open Quaternary* will become a key player in realizing these impacts for the Quaternary research community, and welcome authors who feel the same.

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How to cite this article: Herridge, V, Birch, S P and Law, M 2015 *Open Quaternary: A New, Open Access Journal for Quaternary Research*. *Open Quaternary*, 1: 1, pp. 1-2, DOI: <http://dx.doi.org/10.5334/oq.ad>

Published: 09 March 2015

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