

A COMMENT FROM THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY IN RESPONSE TO:

**THE CALL FOR SUBMISSIONS FROM THE PRESIDENT'S OFFICE OF SCIENCE AND TECHNOLOGY POLICY ON
OPEN ACCESS FOR FEDERALLY-FUNDED RESEARCH**
(<http://edocket.access.gpo.gov/2009/E9-29322.htm>)

The Natural History Museum of Los Angeles County (NHMLAC) is one of the premier research and educational institutions in the United States. Our extensive collections, containing an estimated 35 million specimens and artifacts, form the basis for regular scientific publications and the disseminating of knowledge in a variety of forms. Our researchers, among the best known in the world in their respective fields, are often the recipients of federal funding and regularly play an important role in reviewing proposals for federal funding from other institutions throughout the country.

A core mission of research museums such as NHMLAC is to generate knowledge through research and to disseminate that knowledge through a mixture of scholarly activity and direct contact with the general public. Federally-funded research is essential for the expansion of knowledge through further research activities, but also because research in turn is the core of the extensive exhibit and educational programs that depend on that research and that are uniquely the purview of major natural history museums like ours. For instance, this museum is currently making once-in-a-lifetime changes to more than half of its permanent exhibit space in part to be able to bring to the public new understanding and new questions that have been generated by recent research advances, including those funded by federal grants.

Therefore it is natural that the NHMLAC fully and enthusiastically supports the greatest possible public access to the products of federally funded research. Our job is to make research knowledge publicly accessible. Full open access to scholarly publications is clearly parallel to the traditional role already played by museums.

The Museum and its staff fully support the "unprecedented level of openness in government" as outlined by President Obama in his Memorandum on Transparency and Open Government, and we strongly support the Federal Research Public Access Act (FRPAA). We urge the White House to direct federal funding agencies to mandate a policy of immediate Open Access for any publications stemming from federal funding (or at most within six months of their appearance in printed form), following the current NIH model of Open Access for all federally funded research.

In answer to the specific questions raised, our replies follow.

1. How do authors, primary and secondary publishers, libraries, universities, and the federal government contribute to the development and dissemination of peer reviewed papers arising from federal funds now, and how might this change under a public access policy?

Answer: The Natural History Museum of Los Angeles County publishes peer-reviewed research papers from its federal funding for science. It also disseminates information through its exhibitions, public programs and in-house publications, such as its journal *Contributions to Science* and the less frequent *Science Series* publications. Under a public access policy that provided funding to disseminate research papers, this aim could be realized by allowing direct public access to research papers from its web site, and by the digitization of its *Contributions to Science* and *Science Series* publications to allow free public access to all back issues (funding would be required to do so).

2. What characteristics of a public access policy would best accommodate the needs and interests of authors, primary and secondary publishers, libraries, universities, the federal government, users of scientific literature, and the public?

Answer: Creating and maintaining open access to research results will require a commitment to financial support from the federal government. Making research results available on demand does take time, effort,

and resources. Financial support will be needed to establish and maintain central or institutional repositories (e.g. for computer hardware and ongoing curatorial work), for the initial digitization and organization of the materials (e.g. scanning and processing of paper documents), and for the accommodation of special or extensive requests for materials.

For all of the stakeholders listed in question 2, with one exception, the unambiguously clear answer is that immediate and full access to published research provides the greatest benefit. The sole exception to that, of course, is the publishers. The scientific publishing model that developed over the last few centuries is built on the idea that it costs significant amounts of money to print and distribute scientific papers. To recoup that expense, publishers use copyright to prohibit or limit dissemination of published papers unless they receive payment for them. Researchers are not paid for their publications, nor are the scientific editors or the peer reviewers. Publishers today are trying to make that traditional model persist by limiting dissemination of scientific publications in electronic form (via copyright).

Over the last two decades, the actual cost of publishing and disseminating a scientific paper has plummeted to near-zero. The added value that scientific publishers used to provide (typesetting, printing, and distributing) is essentially non-existent today.

Although increased public access might hurt some publishers, it is not the mission of the federal research establishment to ensure continued business success for publishers. It is, however, incumbent on the government to make the products of federally funded research available to the public as widely and quickly as possible. We strongly urge immediate public access to the products of federally funded research. The benefit to researchers, practitioners, and the general public outweighs any harm that would result to commercial scientific publishing companies.

3. Who are the users of peer-reviewed publications arising from federal research? How do they access and use these papers now, and how might they if these papers were more accessible? Would others use these papers if they were more accessible, and for what purpose?

Answer: The users of peer-reviewed research publications include other researchers, government agencies, universities (for both research and teaching), environmental consultants, non-university school teachers at various levels, and to some degree the inquisitive public. They currently access papers either by being subscribers to the journals (principally through their libraries) or by requesting reprints of the papers directly from the authors. If the papers were freely accessible, we expect there would be much greater use of the work, especially by students and the general public.

4. How best could federal agencies enhance public access to the peer-reviewed papers that arise from their research funds? What measures could agencies use to gauge whether there is increased return on federal investment gained by expanded access?

Answer: Federal agencies could best enhance public access to their peer-reviewed papers arising from their research funds by mandating that all funded researchers publish in open access journals, by allowing costs for the purchase of pdf reprints for each journal, by funding improvement of the host institutions website so that public access to research publications (by pdf download) is facilitated, and by direct negotiation with journals in order to seek access to all published work.

Ensuring effective access will require financial support for either (or both) centralized or institutional repositories. This expense, however, will be trivial compared to the investment already made in generating the research. We strongly recommend that federal funding agencies be instructed to set aside a small but significant amount of funding directly for public access to research. This very small amount of funding would multiply the value of the research by making it available and would allow the researchers to comply with the access mandate.

5. What features does a public access policy need to have to ensure compliance?

Answer: To be effective, a public access policy must provide strong incentives to ensure that publications (and possibly supporting data) are properly deposited. We recommend that future funding from federal agencies should be made contingent on proper deposition of previously funded publications (starting from the time of adoption of a public access policy). This could be achieved by requiring the “Results of Prior Research” sections of grant applications to enumerate the public depositories where those results were placed. Failure to properly deposit publications in a public access repository should be treated in the same way as failure to publish the results of federally funded research, or failure to account for expenditure of federal research funds.

Additionally, to ensure compliance, a public access system must take into account the legal requirements of the publishing companies who produce the original papers and often retain copyright over each publication with respect to providing open access to the published intellectual property; the system must also take into account clear and unambiguous acknowledgement of the author and institutional rights pertaining to copyright and intellectual property embodied within the publications being made freely public. Publishers who wish to publish the results of federally funded research will be required to make Open Access to the papers a part of their copyright policy.

6. What version of the paper should be made public under a public access policy (e.g., the author's peer reviewed manuscript or the final published version)? What are the relative advantages and disadvantages to different versions of a scientific paper?

Answer: We believe that the final published version is preferable to earlier copies of the manuscript. Clearly, only peer-reviewed manuscripts should be required to be available to the public. Any non-reviewed work could be erroneous or represent the biased views of an individual rather than a peer-assessed viewpoint. We see no hypothetical cases whereby a non-reviewed scientific paper would have advantages for clarity or correctness over a peer-reviewed manuscript.

A common compromise in scientific publishing today is for publishers to permit open access to the final peer-reviewed manuscript in public depositories, but to prohibit public access to the final published version. This approach is not acceptable to museum scientists, and we recommend requiring public access to the final published version. An example of the reasoning behind this recommendation stems from the requirements of a major component of museum research: taxonomic publications. Taxonomy, the discipline responsible for systematically naming and organizing our biodiversity knowledge, depends on precise knowledge of publication dates and the exact language of textual species descriptions in order to achieve stability in describing the natural world. Those requirements are analogous to the need to know a date of publication to determine precedence in other scientific fields when essentially similar ideas are near-simultaneously published. However, in taxonomy, those date of publication requirements pertain to every single publication that erects a new species or taxon name.

Because of the requirements for precise knowledge of dates of publication in taxonomy, having multiple versions of papers accessible (for example, a final manuscript in a depository and a “published” version at a journal depository) is damaging to the science. Therefore we strongly recommend that a public access requirement should require access to the final published version.

7. At what point in time should peer-reviewed papers be made public via a public access policy relative to the date a publisher releases the final version? Are there empirical data to support an optimal length of time? Should the delay period be the same or vary for levels of access (e.g., final peer reviewed manuscript or final published article, access under fair use versus alternative license), for federal agencies and scientific disciplines?

Answer: We believe that access to peer-reviewed papers should be immediate upon publication. The only reason for delaying access is to provide financial reward to publishers. We believe that the benefits of immediate open access outweigh the harm to publishers that is likely to result.

Because we recommend that the final published version should be the version made available (see answer to question 6), there is no decision to be made regarding different delays for different versions.

8. How should peer-reviewed papers arising from federal investment be made publicly available? In what format should the data be submitted in order to make it easy to search, find, and retrieve and to make it easy for others to link to it? Are there existing digital standards for archiving and interoperability to maximize public benefit? How are these anticipated to change?

Answer: Peer-reviewed papers arising from federal investment could be made publicly available from the host institution website or from newly created websites that host specific subject areas where the public can access published works (e.g. a portal about North American biodiversity or Paleontology etc). Data should be submitted as published pdfs of the papers with a consistent naming system (e.g. author date abbreviations and subject abbreviation). We would suggest that devising a system for free public access be done by archivists working with scientific librarian expertise. We do not know how these systems might change in future.

9. Access demands not only availability, but also meaningful usability. How can the federal government make its collections of peer-reviewed papers more useful to the American public? By what metrics (e.g., number of articles or visitors) should the Federal government measure success of its public access collections? What are the best examples of usability in the private sector (both domestic and international)? And, what makes them exceptional? Should those who access papers be given the opportunity to comment or provide feedback?

Answer: The federal government could make its collections of peer-reviewed papers more accessible to the public if funds were made available to develop clear, easily understood short summaries to accompany each paper, such as a synopsis written in lay terms that summarizes the fundamental points of the publication. Museums that use federally funded research to enhance their exhibitions and public programs could highlight areas in displays where federally funded research enabled the information to be developed, or have free access via download stations within its newly developed exhibitions if funds were made available to add such facilities to existing exhibitions. A tangible example of this might be in the Natural History Museum of Los Angeles County's newly developed "Age of Mammals" Gallery (to open July 2010) where several new kinds of prehistoric mammals will be display publicly, some of which were described using federally funded grants. If funds were made available a simple computer terminal could be added to the gallery where interested members of the public could type in a request for a free copy of the research paper and then have it automatically e-mailed to them.

* * * End of File * * *