Consortium of Aquatic Science Societies

American Fisheries Society • Association for the Sciences of Limnology and Oceanography • Coastal and Estuarine Research Federation • Freshwater Mollusk Conservation Society • International Association for Great Lakes Research • North American Lake Management Society • Phycological Society of America • Society of Canadian Aquatic Sciences • Society for Freshwater Science • Society of Wetland Scientists

29 October 2024

Arati Prabhakar, Ph.D.
Director, White House Office of Science and Technology Policy (OSTP)
Assistant to the President for Science and Technology
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Re: Implementation of "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research" Memo

Dear Director Prabhakar,

The Consortium of Aquatic Science Societies (CASS), comprising ten societies representing more than 18,000 members with expertise in aquatic sciences and management, writes to express concern about the implementation of public access policies for federally funded research results and data and, specifically, the OSTP memo of August 25, 2022, "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research," hereafter referred to as the Nelson memo. CASS works to promote the advancement of aquatic sciences and scientifically-sound policy; therefore, it is our goal to ensure the best available science is accessible and used to improve our understanding and management of freshwater, estuarine, coastal, and ocean resources to the benefit of the economy, environment, and public health and safety within the United States and globally. CASS strongly supports the principles of open science and the importance of freely sharing research results in a timely and equitable manner for the benefit of the scientific enterprise. We agree that all federally funded research results and data should be immediately accessible to the public as outlined in the Nelson memo. However, we express concern about how the memo has been implemented by various federal agencies and the potential unintended consequences on professional societies and the quality and equity of the research enterprise as a whole, and respectfully submit recommendations on how to improve full implementation before the December 31, 2025, deadline.

Concerns

1. Scientific societies play a critical role in the research enterprise that was not adequately considered when developing new policies.
2. Scientific societies may face significant financial impacts because of the proposed policies.
3. Scientific societies were not engaged during stakeholder outreach by OSTP and federal funding agencies.
4. The proposed policies may lower the quality of published research.
5. The proposed policies may exacerbate existing inequities in the research enterprise.
6. Lack of coordination across federal agencies will hinder the goal of allowing all Americans to benefit from the returns of federally funded research results.

Recommendations

1. Engage professional societies to inform draft policies.
2. Support partnerships with professional societies for policy implementation.
3. Require agencies to include open science costs in future budgets.
4. Develop policies to support less-resourced researchers.
5. Analyze inconsistencies across agencies and require alignment where possible.

Scientific societies play a critical role in the research enterprise that was not adequately considered when developing new policies.

Peer-reviewed scholarly journals are critical for sharing high-quality, cutting-edge research results that have been reviewed for validity, significance, and originality.[1] These publications are necessary not only for disseminating research results to the broader scientific community but also to aid decision making by managers, policy makers, and the interested public. The publishing landscape is made of both for-profit and not-for-profit organizations. In aquatic sciences (and arguably in natural sciences worldwide), some of the most prestigious peer-reviewed journals, such as CASS journals, are owned by not-for-profit professional societies, whether they are self-published or published in partnership with a commercial or not-for-profit publishing company. Journals owned by not-for-profit professional societies provide many benefits to the research enterprise.[2,3] Societies have many mechanisms for providing an additional level of rigor and prestige to ensure the highest-quality publications, including:

- Governing bodies of not-for-profit societies (e.g., boards of directors, publications committees) provide oversight of all journal activities and are motivated and legally bound to prioritize mission over profit.
- Society leaders oversee the selection of editors to ensure journals are managed by independent editorial boards composed of well-regarded, active scientists who are experts in their fields.
- Society leaders and journal editors develop and enforce policies and procedures to maintain quality, ethical conduct, and rigor in editorial decisions.

[1] Kelly, J et al. 2014. Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide. *EJIFCC*. 25(3): 227-43.
[2] Cloern, J. 2023. Why should I submit my article to a scientific-society journal? *Limnology and Oceanography Letters* 8: 799-803.
[3] Suzuki, K. et al. 2016. A Learned Society's Perspective on Publishing. *Journal of Neurochemistry* 139 Suppl 2: 17-23.

- Society leaders prioritize the journal's reputation for disseminating high-quality research results because this reflects on the reputation and standing of the society.

In addition to the important role societies play in disseminating research results, a portion of the revenues generated by publishers (through publication fees, subscriptions, and royalties) goes back to the professional societies even if the journals are published in partnership with a commercial publisher. CASS societies derive significant portions of their net revenues from journal income. Studies have shown that a large percentage of the spending of professional societies is supported by journal income, and these funds subsidize critical services to society members and the scientific enterprise at large.[2,4,5] Professional societies provide invaluable services beyond peer-reviewed publications such as convening conferences and meetings, providing scholarships and grants, recognizing outstanding achievement in the discipline, connecting employers and academic institutions with prospective employees and students, and offering professional development programs, particularly on skills not commonly taught elsewhere. Journal income often underwrites the costs of these activities, which may otherwise be net losses. Often these revenues are intentionally invested in improving equity and access in publications and non-publication programming. CASS examples include:

- The Association for the Sciences of Limnology and Oceanography (ASLO) is able to provide a range of important benefits to early-career researchers (ECRs) in part because of journal net revenue, including the Raelyn Cole Editorial Fellowship that provides professional development for ECRs in publishing, peer review, and scientific writing; and the Early Career Publication Honor which pays the costs for publishing open access in their journals for ECRs in need, including those from the Global South.[6,7]
- The Coastal and Estuarine Research Federation (CERF) heavily subsidizes its biennial conference registration rates for students, ECRs, and those from emerging and developing nations, which often results in a net loss that is covered by net revenue from its journal *Estuaries and Coasts*. At the last CERF conference in November 2023, individuals in the aforementioned categories accounted for more than 52% of the attendees.
- The International Association for Great Lakes Research published a special section on Advancing Africa's Great Lakes Freshwater Research in its *Journal of Great Lakes Research* in 2023.[8] This collection, including five review articles, is an important contribution to the understanding and advancement of African Great Lakes research and was able to be published open access in part because of subsidies from journal revenues.

Particularly in the face of inflation and increasing costs of meetings and conferences, societies are becoming more reliant on the stable income from journals to provide these important services to the community and to support day-to-day operations.

Altogether, the ten CASS societies publish 15 scholarly peer-reviewed journals; all but one are published

[4] Chytrý, M. et al. 2023. The benefits of publishing in society-owned scientific journals. *Applied Vegetation Science* 26: e12705.
[5] Johnson, R., et al. 2018. *The STM report: An overview of scientific and scholarly publishing*. International Association of Scientific, Technical, and Medical Publishers. Available at: https://www.stm-assoc.org/2018_10_04_STM_Report_2018.pdf.
[6] Deemer, B.R. et al. 2021. Engaging the next generation of editorial talent through a hands-on fellowship model. *Ecology Letters* 24: 1297–1301.
[7] Hotaling, S. et al. 2023. Taking steps to address inequities in open-access publishing through an early career publication honor. *Limnology and Oceanography Letters* 8(3): 385-387.
[8] Hecky, R.E., and S.J. Guildford, Eds. 2023. Special Section on Advancing Africa's Great Lakes Freshwater Research. *Journal of Great Lakes Research* 49(6).

in partnership with larger publishers (i.e., Springer Nature, Elsevier, Taylor & Francis, Wiley, Oxford University Press, and the University of Chicago Press). These journals publish the latest research results and other scholarly contributions, including novel methods, reviews, management-relevant research and recommendations, and commentaries. Most of these journals are published in the hybrid open access model. This means authors have the option to publish open access for a fee or through a transformational agreement (if their institution has such an agreement), or to publish free of charge under a subscription license if they lack funding to support open access article processing charges (APCs). Societies can cover costs of free publications through sales of journal subscriptions and other charges to readers, and articles that are not open access are behind a paywall for those without a subscription. In contrast, societies have very few options for recouping charges for open access articles other than APCs. CASS is concerned that the current proposed policies do not consider the impact on society-owned journals and, as proposed, we believe they will have unintended negative consequences on societies and the dissemination of federally funded research results.

Scientific societies were not engaged during stakeholder outreach by OSTP and federal funding agencies.

CASS society leadership and members feel they are uninformed about the federal funding agencies' plans to implement open science. The CASS societies have been aware of the Nelson memo since shortly after its release but have had no direct engagement from OSTP and the federal agencies as they have developed and implemented new policies in response to the memo. The minimal information we have received has been largely communicated through our publishing partners, not the federal government. None of the signatories to this letter were formally consulted or informed by OSTP nor any relevant federal funding agency when the memo was released, during the development of policies, when draft policies were released, when OSTP approved policies, or when policies began applying to submissions. A recent discussion by CASS publications leaders led us to research the status of implementation of the Nelson memo. Even then, from our experienced perspective, it was difficult to find and understand the information. Although it seems most agency plans are available on the website science.gov, it is unclear which plans are draft and which are approved and being applied to federal funding. Several responses are still listed as "In Progress" online despite guidance in the memo that plans should be submitted "180 days after the date of this memorandum for federal agencies with more than $100 million in annual research and development (R&D) expenditures," which applies to both the U.S. Environmental Protection Agency and National Oceanic and Atmospheric Administration, two major aquatic science funding agencies. The lack of outreach has resulted in CASS societies having limited knowledge on which to make strategic decisions about how to continue publishing high-quality science in a landscape of changing policies and funding models. For example, ASLO has announced plans to flip all of its hybrid journals to fully "gold" open access in the near future but has not had the benefit of full transparency and engagement with federal agencies to understand the financial implications of these plans.[9] Another concern is the possibility of federal policies conflicting with publisher policies. For example, currently, the *Journal of Great Lakes Research* does not allow the publisher's accepted manuscript to be freely accessible until a one-year embargo is complete; this means that no federally funded research could be published in this prestigious journal without payment of APC fees, which may be prohibitive for some authors. Not only will this impact the submissions to the journal, but it will also cause confusion and potential risk to authors who may not understand the conflicting rules. Without our input, we suspect the transition to open science and plans to make scholarly publications publicly accessible without an embargo on their free and public

[9] Glibert, P.M. 2024. Message from the President: Trials and Tribulations of Transitions and Transformations in Publishing: What it Means – For ASLO and You. *Limnology and Oceanography Bulletin.* 32(3): 110-112.

release will be more complicated and turbulent than necessary, with unintended consequences for well-respected peer-reviewed journals, professional societies, and researchers.

Scientific societies may face significant financial impacts because of the proposed policies.
In the short term, most CASS societies are finding that the increase in the proportion of open access articles has led to a decrease in net revenues and/or greater annual instability. This may be due to a variety of factors, including lower net revenue from open access APCs versus subscriptions, fewer people publishing in hybrid journals and moving to full open access, and unpredictable fluctuations as larger institutions move from subscriptions to transformational agreements. Regardless, the negative effects on professional societies are real and will increase with increased pressure to pursue open access publishing. The CASS societies have been rigorously following the open access discussion and have been planning for transitions to more open models; however, the implementation of this shift in U.S. federal policy without consultation of professional societies or sufficient communication of the details has caught us unprepared. We see the move toward open access already reducing revenues to some professional societies, thus reducing the ability to fund critical programming and even raising concerns that some journals and societies may fail under an abrupt transition.

The proposed policies may exacerbate existing inequities in the research enterprise.
In addition to the impact on professional societies, we express deep concern that these new policies will deepen existing inequities in the aquatic science research community. CASS societies have begun work to address the systemic inequities inherent in the current publishing model which we know disadvantages historically-excluded communities and countries[10] and less-resourced researchers, including women,[11,12] those in the Global South,[13] and novice English writers.[14] There is ample evidence and commentary that requirements to publish open access are likely to disproportionately impact less-resourced researchers.[15,16,17,18,19] This includes students and ECRs who need publications to advance in their careers,[20] those at less research-intensive institutions including many primarily undergraduate institutions and minority-serving institutions, those in disciplines with lower federal funding expenditures such as social sciences, and researchers based in the Global South[21] (who may be collaborating with U.S.-based federally funded researchers and, thus, may be required to follow U.S. public access policy).

[10] Mori. A.S. et al. 2015. Academic inequality through the lens of community ecology: a meta-analysis. *PeerJ* 3: e1457.
[11] Maas B, et al. 2021. Women and Global South strikingly underrepresented among top-publishing ecologists. *Conservation Letters* 14: e12797.
[12] Squazzoni, F. et al. 2021. Peer review and gender bias: A study on 145 scholarly journals. *Science advances* 7(2): eabd0299.
[13] Czerniewicz, L. 2015. Confronting inequitable power dynamics of global knowledge production and exchange - opinion. *The Water Wheel* 14(5): 26-28. https://hdl.handle.net/10520/EJC176212.
[14] Ramírez-Castañeda. V. 2020. Disadvantages in preparing and publishing scientific papers caused by the dominance of the English language in science: The case of Colombian researchers in biological sciences. *PLoS ONE* 15(9): e0238372.
[15] Ross-Hellauer, T., S. Reichmann, N.L. Cole, A. Fessl, T. Klebel, and N. Pontika. 2022. Dynamics of cumulative advantage and threats to equity in open science: a scoping review. *R. Soc. Open Sci.* 9211032.
[16] Istratii, R. and M. Demeter. 2020. Plan S and the 'opening up' of scientific knowledge: A critical commentary. *Decolonial Subversions* Year 2020: 13-21.
[17] Carling, J. et al. 2018. *At the crossroads of open access to research. An assessment of the possible consequences of Plan S for publishing, research quality and research environments*. Oslo: PRIO.
[18] Kamerlin, S.C.L., et al. 2021. Journal Open Access and Plan S: Solving Problems or Shifting Burdens? *Development and Change* 52: 627-650.
[19] Rodrigues M.L. 2022. Article-processing charges as a barrier for science in low-to-medium income regions. *Memórias do Instituto Oswaldo Cruz* Jun 17;117: e220064.
[20] McKiernan, E.C. et al. 2019. Meta-Research: Use of the Journal Impact Factor in academic review, promotion, and tenure evaluations. *eLife* 8: e47338.
[21] Kwon, D. 2022. Open-access publishing fees deter researchers in the global south. *Nature.*

OSTP's own research indicates the share of open access (gold, green, and bronze) publications is highest at R1 (the most highly research intensive) institutions,[22] which are more likely to have large federal grants and transformative agreements that can cover open access APCs. The disparity in open access publishing between R1 universities and less-research-intensive institutions will likely increase with the new public access policies. The report also noted the impact on ECRs, who stated the "publish or perish" model of success in academia means that requirements to publish open access may be an obstacle to their success because they will be forced to choose between publishing more articles for free or fewer articles in more prestigious journals with high APCs.[22] This can heavily impact the trajectory of ECRs, given the importance of publishing (e.g., tenure and promotion for academics), particularly in well-regarded journals.[20]

The proposed policies may lower the quality of published research.

The proposed requirements are likely to push authors to publish open access and in the current pay-to-publish model, they may be forced to select journals based not on the reputation or best fit with their manuscripts, but on what outlet is the cheapest or has a publishing agreement with their employer. Traditionally, authors consider journal quality and impact factor as the most important drivers for where to submit because their research reputation and career advancement depends on not just the number of publications, but the impact factor of the journals in which they publish and the number of citations each manuscript receives, which are likely to be higher in more prestigious established journals.[23] However, the twenty-year trend toward open access, accelerated by the coalition of European funding agencies launch of Plan S in 2018, has shifted author motivations. Well-resourced authors can continue to pay to publish in more prestigious journals (which often have higher APCs), essentially allowing them to pay more for higher impact, while less-resourced authors are looking for cheaper open access venues, leading to widening inequities. It has also led to the proliferation of new, lower-cost open access journals, many with lower editorial standards, minimal or no real peer review, and lack of credibility. This includes so-called "predatory journals" which actively seek researchers who are looking to publish open access at low cost.[24,25] Even for well-resourced researchers, grant funding has often ended by the time a federally funded research project's results are ready to be published, which may lead to limited choices for publishing and drive authors to publish with journals that have transformative agreements with their institutions.[26] Although it seems most updated federal agency policies will allow authors to submit the (non-copyedited or typeset) accepted manuscript to a repository to comply with requirements, data show that open access "version of record" articles are more highly read and cited, driving researchers to select journals based on which have the lowest APCs, which are often gold open access journals not as highly ranked as hybrid journals (such as most run by CASS and other scientific societies).[27,28] Interestingly, evidence shows that open access articles in predatory journals have lower citation rates and little scientific impact, harming

[22] OSTP. 2023. *Report to the U.S. Congress on Financing Mechanisms for Open Access Publishing of Federally Funded Research*. Office of Science and Technology Policy, Washington, DC, U.S.A.

[23] Vogel G. 2011. Scientific publishing. Open access gains support; fees and journal quality deter submissions. *Science* 331(6015): 273.

[24] Dudley, R. G. 2021. The Changing Landscape of Open Access Publishing: Can Open Access Publishing Make the Scholarly World More Equitable and Productive? *Journal of Librarianship and Scholarly Communication* 9(1): eP2345.

[25] Wilson, N. 2023. Predatory journals. *BioScience* 74: 6-11.

[26] Jahn, N. 2024. How open are hybrid journals included in transformative agreements? *arXiv* 2402.18255.

[27] Wenaas, L. 2022. Choices of immediate open access and the relationship to journal ranking and publish-and-read deals. *Frontiers in Research Metrics and Analytics* 7: 943932.

[28] Piwowar, H., et al. 2018. The state of OA: A large-scale analysis of the prevalence and impact of open access articles. *PeerJ* 6: e4375.

those who do not have the resources to publish in more prestigious journals with higher APC charges.[29]

The move away from society-owned journals could lead to a decline in the quality of published science due to lower editorial standards; as previously argued, professional societies are strongly motivated to maintain high editorial standards and provide rigorous peer-review resulting in improved publications,[2,30] and the same is not always true for for-profit journals. Thus, as the scientific enterprise transitions to a more open model, the quality of science-based decision making may also be impacted.

Lack of coordination across federal agencies will hinder the goal of allowing all Americans to benefit from the returns of federally funded research results.

It appears to CASS leaders that federal funding agencies have developed individual policies without cross-coordination. Although we understand there is no one-size-fits-all policy, it seems there is a great deal of inconsistency across agencies on how policies may be applied, leading to confusion for our members and other researchers who often receive funding from multiple federal funding agencies, sometimes in support of a single publication. OSTP could play a role in standardizing policies and reducing inconsistencies were possible. For example, as previously noted, it appears authors can submit the "accepted manuscript" rather than the "version of record" to satisfy the Nelson memo requirement for making peer-reviewed research publications accessible without an embargo, even if the "version of record" is published behind a paywall. If this is the case, ensuring consistent use of language and definitions of such things as "accepted manuscript" and "version of record" may reduce confusion. OSTP could also simplify compliance by coordinating outreach via the creation and release of uniform, brief, plain-language guidance for researchers on how to satisfy the policies across agencies. Similarly, each agency appears to require publications be deposited into a repository, but each agency also has a different preferred repository. The abundance of repositories makes it hard for researchers to know where they need to submit their manuscripts and for the public to know where to find research results. This may be particularly confusing if manuscripts are the result of research funded by multiple federal agencies. OSTP could encourage agencies to loosen those requirements and encourage more common repositories to be accepted across agencies.

Recommendations

CASS leadership—composed of presidents and other board members, publications committee chairs and members, journal editors, executive directors, and publications staff—have reviewed the draft agency policies in response to the Nelson memo and respectfully share the following recommendations for consideration by OSTP as they move forward with guidance to federal agencies on implementation:

1. **Engage with professional societies directly to inform draft policies:** Although some policies have already been enacted, agencies have until the end of 2025 to complete implementation. Therefore, we recommend OSTP directly engage a diverse suite of professional societies before approving additional policies. We encourage OSTP to seek input from societies from different disciplines, of different sizes, and with different publishing models, including consortia that represent multiple societies such as CASS, but also the American Institute of Biological Sciences, Federation of American Societies for Experimental Biology, and the Council of Engineering and Scientific Society Executives. In addition, OSTP could encourage funding agencies to reach out directly to relevant professional societies in their field.

[29] Björk, B. et al. 2020. How Frequently Are Articles in Predatory Open Access Journals Cited. *Publications* 8(2): 17.
[30] Ware, M. 2008. *Peer review: Benefits, perceptions and alternatives*. Publishing Research Consortium.

2. **Support partnerships with professional societies for policy implementation:** It has been the experience of CASS societies that our members are confused about or unaware of the new policies derived from the Nelson memo. Professional societies can be effective and valuable conduits for outreach to federally funded researchers. We encourage OSTP and federal funding agencies to work with relevant professional societies to connect these new policies with researchers. Professional societies support communication routes such as conferences, peer-reviewed journals, society newsletters, webinars, and similar platforms that have a broad reach. We can assist with the distribution of a coordinated and clear message to our members and the broader research community.
3. **Require agencies to include open science costs in future budgets:** As noted by several policies, the Nelson memo makes clear that agencies should not expect additional funding to support the implementation of open science policies. This will inevitably lead to inequitable impacts on less-resourced researchers who will be unable to publish open access or will be forced to publish in less prestigious journals, and a decrease in the overall level of research as an increased proportion of research funds are spent on publication costs. We recommend OSTP work with the Office of Management and Budget to consider these impacts and work with federal agencies to incorporate open science funds in future budgets.
4. **Develop policies to support less-resourced researchers:** Even if funds are included in agency budgets to support open science, less-resourced researchers will likely continue to face challenges publishing open access. We recommend OSTP work with professional societies to explore solutions that ensure students, ECRs, non-R1 researchers, and collaborators in the Global South remain competitive in the open science publishing world. Particularly given the inequities and environmental justice concerns inherent in aquatic sciences and management, it is critical to ensure we do not unintentionally disincentivize the publication of global aquatic science research in support of vulnerable coastal communities, economies, and ecosystems.
5. **Analyze inconsistencies across agencies and require alignment where possible:** We recommend OSTP review all policies, looking for areas where agencies can align their requirements to reduce confusion among researchers funded by multiple federal agencies, particularly in defining documents and repositories that are compliant with policies.

The CASS societies applaud OSTP's efforts to make publicly funded research more accessible and hope that we can work together to ensure this is done in an equitable and effective manner to the benefit of researchers and the public. We welcome the opportunity to follow up with further information; you can reach us by contacting Diane Lauritsen, CASS Coordinator, at ddlauritsen@gmail.com or 843-822-0822.

Respectfully,

Consortium of Aquatic Science Societies

CC Glenn Thompson, Chair, U.S. House Committee on Agriculture
David Scott, Ranking Member, U.S. House Committee on Agriculture
Cathy McMorris Rodgers, Chair, U.S. House Committee on Energy and Commerce
Frank Pallone, Ranking Member, U.S. House Committee on Energy and Commerce
Bruce Westerman, Chair, U.S. House Committee on Natural Resources

Raúl Grijalva, Ranking Member, U.S. House Committee on Natural Resources
Frank Lucas, Chair, U.S. House Committee on Science, Space, and Technology
Zoe Lofgren, Ranking Member, U.S. House Committee on Science, Space, and Technology
Sam Graves, Chair, U.S. House Committee on Transportation and Infrastructure
Rick Larsen, Ranking Member, U.S. House Committee on Transportation and Infrastructure
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Maria Cantwell, Chair, U.S. Senate Committee on Commerce, Science, and Transportation
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Tom Carper, Chair, U.S. Senate Committee on Environment and Public Works
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