

How Open Access is Crucial to the Future of Science

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ABSTRACT A commentary published recently in *Journal of Wildlife Management* argued that open access publication has strong negative implications for the future of science. Unfortunately, that commentary was founded in serious and deep misconceptions about the distinctions between open access, commercial, and society publications, and the rigor of peer review in open access journals. To the contrary, open access responds more appropriately than traditional closed publishing venues to the needs and participation of an increasingly global scholarly research community, and peer review by a broader community may in many cases be more rigorous, responding to the increasingly interdisciplinary nature of modern research. We respectfully suggest that The Wildlife Society consider a transition from closed access to open access for the *Journal of Wildlife Management*, as a means of optimizing and maximizing its role in communications in the field.

The *Journal of Wildlife Management* (JWM) published a commentary (Romesburg 2016) entitled “How Publishing in Open Access Journals Threatens Science and What We Can Do

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About It.” Romesburg (2016) argued that society journals are superior to open access (OA) journals, offered advice to researchers about where best to publish their work, and presented a plan for strengthening and sustaining JWM. Unfortunately, however, his commentary was based on assumptions about OA and scholarly communication that are incorrect and out of touch with current realities. We are concerned with his mischaracterization of OA: besides being misleading, it denies The Wildlife Society (TWS) members a clear understanding of the benefits of OA to the wildlife management community. Here, we offer an alternative vision for scholarly communication and the future of JWM.

WHAT IS OPEN ACCESS?

A significant problem with Romesburg’s (2016) commentary is that it centers on a grossly oversimplified model of scholarly communication. Romesburg (2016) considered 3 kinds of academic journals: society journals (e.g., JWM), commercial journals (e.g., *Journal of International Wildlife Law and Policy*, published by Taylor & Francis), and OA journals (e.g., *Microbial Biotechnology*, *Journal of Pest Management*). However, the real scholarly communications landscape is vastly more complicated. For example, society journals themselves are frequently published by commercial presses (e.g., JWM is published by Wiley-Blackwell Co.), whereas others are published independently or via lower-cost consortia such as BioOne, and some are OA journals. Although most commercial journals are not open (i.e., access by individual payment or institutional subscriptions), others are OA; increasing numbers of new journals are created under various OA models. Some OA journals are for-profit, commercial enterprises (e.g., *PeerJ*, BioMed Central journals). Since his categorization of journals falls apart

on examination, much of Romesburg's (2016) analysis fails as well: quite simply, the logic that society journals = good, OA = bad falls apart because the distinction does not actually exist.

Romesburg (2016) also linked OA journals with article processing charges (APCs). Again, Romesburg (2016) oversimplified: not all OA journals are APC-funded. Indeed, recent studies indicated that only ~26% of OA journals rely on APCs (Solomon and Björk 2012, Morrison et al. 2015). Numerous solutions exist that do not involve APCs: institutional subsidy (e.g., *American Museum Novitates*, *Emerging Infectious Diseases*, *Slovene Linguistic Studies*), society subsidy (e.g., *Microbial Biotechnology*, *Journal of Pest Management*), low-cost lifetime author subscription (e.g., *PeerJ*), and university library support (e.g., *Biodiversity Informatics*), or combinations thereof. The authors of the present commentary, in spite of our intense advocacy of OA, have argued that OA APCs create authorship barriers out of readership barriers (Bonaccorso et al. 2014), that these barriers are an emerging problem in scholarly communication, and that APCs should be replaced by other sources of support (Peterson et al. 2016).

OA, PEER REVIEW, AND SCHOLARLY DEBATE

Peer review is a *sine qua non* in scholarly communication, yet critics of OA have frequently charged that OA journals provide weaker or nonexistent peer review. That view is based on a limited number of parasitic journals that are openly accessible to readers, such as *Poultry*, *Fisheries & Wildlife Sciences* and others published by OMICS Group (at present under investigation by the Federal Trade Commission). Such predatory, moneymaking enterprises prey on non-discriminating scholars who fall for imitations of real, properly peer-reviewed scholarly journals by extracting APCs without rigorous review or other editorial improvement of

manuscripts. Suber (2012: 20-21) noted, “OA isn’t an attempt to bypass peer review. OA is compatible with every kind of peer review, from the most conservative to the most innovative, and all the major public statements on OA insist on its importance.” The parasitic journals are clearly identified and segregated from the OA journal ecosystem.

At present, excluding the predatory journals mentioned above, OA journals offer peer review that is solidly on par with that of society journals and commercial journals (Björk and Solomon 2012, McKiernan et al. 2016, Wicherts 2016), as can be appreciated based on their high citation rates and ‘impact factors’ (Thomson-Reuters 2015). Further, peer review has well documented problems independent of distribution model; good and bad scholarship is published in all kinds of journals (Van Noorden 2014, Wicherts 2016). In fields relevant to wildlife management, OA journals such as *PLoS Biology* and *BMC Ecology* are notoriously difficult in terms of peer review and rejection rates, such that getting a paper published at these journals is highly valued. New appearances (e.g., *Science Advances*) are rapidly attaining similar status (Google Scholar h5-index of 32). Romesburg (2016) focused on *PLoS ONE*, which is an all-science journal, but it is far from “easy,” and it provides rigorous peer review. In a recent investigation commissioned by *Science* (Bohannon 2013), *PLoS ONE* emerged among the most rigorous:

Some open-access journals that have been criticized for poor quality control provided the most rigorous peer review of all. For example, the flagship journal of the Public Library of Science, PLoS ONE, was the only journal that called attention to the paper's potential ethical problems, such as its lack of documentation about the treatment of animals used to generate cells for the experiment. The journal meticulously checked with the fictional

authors that this and other prerequisites of a proper scientific study were met before sending it out for review. PLoS ONE rejected the paper 2 weeks later on the basis of its scientific quality.

The point is that the peer review system in general has its problems, as noted above: bad papers get published in all sorts of journals, subscription or OA. Retractions of papers for reasons of mistake or misconduct are increasing in frequency (Steen 2011) in both distribution models, including in the best of society journals (e.g., McNutt 2016). Put another way, the issue of the quality and rigor of peer review is altogether a separate question than whether access to a journal is open or closed.

A more objective viewpoint might recognize journals such as *PLoS ONE* for their contributions to improving peer review. Although Romesburg (2016) looked to society journals as the best fora for disciplinary peer review, much of the science that journals like JWM publish is increasingly interdisciplinary in nature; such papers that bridge among scientific knowledge realms are best reviewed by a more diverse spectrum of reviewers than may be available to a closed (toll access) society journal. Some OA journals are experimenting with open peer review, which may improve the value, rigor, and transparency of the peer review process still more (Wicherts 2016). Whereas sharing of data among researchers is a long-held ethical obligation, PLoS journals should be congratulated for their concrete efforts to open access to scientific data (Silva 2014), as openly access to data increases transparency, reproducibility, and efficiency, making for better and more rigorous science (Molloy 2011).

More generally, Romesburg (2016) claimed that high-quality scholarly debate is best conducted in relatively closed venues, specifically, within scholarly societies. Although we

appreciate the importance of scholarly societies as venues for debate and discourse, and also for training and guiding next generations of disciplinary scientists, the assertion that they provide the best venue for debate is questionable. Frequently, a field is challenged intellectually when its ideas, assumptions, and approaches are examined by specialists in other fields, who may have different assumptions, experiences, and lessons learned. Furthermore, not all wildlife management researchers globally have access to JWM, as a consequence of the costs involved. In this sense, exposing a piece of work globally in an OA framework may be the very best way of advancing the science.

A GLOBAL VIEW

Where Romesburg (2016) was perhaps farthest out of bounds was in his comments regarding participation of a global community of scholars. The scholarly community has evolved massively, such that the community of participants now extends globally: in 2014, papers published in JWM came from 30 countries (Krausman 2016), and the most recent issue (July 2016) includes papers by authors from 8 countries, including Croatia, Slovenia, and Uganda. Scholars in such countries may frequently be unable to access society journal publications (and commercial), such that closed-access journals exclude them (Bonaccorso et al. 2014), both as readers and authors (although JWM can excuse page charges in such cases). Romesburg's (2016: 1149) solution was stated as

For researchers in developing countries, for whom publishing in society journals may be deterred by expense, a possible solution is to collaborate with researchers in developed countries who are in a position to pay the page charges. Another

thing that can help is writing the articles concisely, paring down the number of pages. Few are the manuscripts that cannot be cut by a quarter or a third while retaining full content.

Although none of us is based in a developing country, based on extensive discussions with developing-world colleagues (Bonaccorso et al. 2014), it is clear to us that scholars there find these ideas to be patently offensive. Romesburg (2016) seems to be suggesting that developing-world scholars either sell authorships to coauthors in exchange for payment of page charges or simply write less than the more prosperous authors. We do, however, agree that many scientific papers could be written more concisely.

A FUTURE FOR JWM

We are indebted to Romesburg (2016) for opening a conversation about JWM and access to the scientific literature, in this case specific to the wildlife management community, although we come to opposite conclusions. The JWM is an interesting case in the scholarly communications landscape for wildlife management: a society journal published by a commercial publisher. This arrangement has the advantage of the society to provide disciplinary expertise and readership, and provides the society with a monetary incentive from Wiley-Blackwell. It has the long-term disadvantage, however, of closing access to JWM content in a scholarly communications landscape where closed access to journals is increasingly rare. It has the added disadvantage of denying access to practitioners in the field in many parts of the world, without wealthy institutional affiliation or costly subscriptions (institutional subscriptions to JWM appear to range \$1000–1200 U.S.), who are thereby denied the chance to read, cite, and build on work

reported there. A recent reflection in the conservation biology literature amplified the problem still further: "lack of openness of the field towards voices from developing countries is not just a loss for those countries, but a loss for readers in high income countries, who get a misleading view of what the most important issues are for conservation globally" (Mammides et al. 2016).

Scientific societies are founded on the idea of knowledge dissemination, and their journals, newsletters, and annual meetings center on fostering communication within a discipline or community. As such, societies such as TWS should examine their activities with an eye to fulfilling that mission, just as many societies have emphasized the importance of keeping the expense of attending society meetings low to reduce barriers to participation. As such, we respectfully suggest that TWS rethink its contract with a commercial publisher to publish JWM. To the extent that TWS wishes to fulfill a mission of fostering communication on wildlife management, an eventual transition to an OA publishing plan would be in order, using the Harvard Library Office for Scholarly Communications' recent report (Solomon et al. 2016) as a guide for navigating the transition and finding alternative revenue sources to pay the real and undeniable costs of publishing science. This shift would amplify TWS's role and impact in fostering relevant, global, and inclusive communication across the field.

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