

David vs Goliath: Early career researchers in an unethical publishing system

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Abstract

The publish-or-perish culture in academia has catalysed the development of an unethical publishing system. This system is characterised by the proliferation of journals and publishers—unaffiliated with learned societies or universities—that maintain extremely large revenues and profit margins diverting funds away from the academic community. Early career researchers (ECRs) are particularly vulnerable to the consequences of this publishing system because of intersecting factors, including pressure to pursue high impact publications, rising publication costs and job insecurity. Moving towards a more ethical system requires that scientists advocate for structural change by making career choices that come with risks, many of which disproportionately impact ECRs. We illuminate major issues facing ECRs in Ecology and Evolution under the current publishing system, and propose a portfolio of actions to promote systemic change that can be implemented by ECRs and established researchers.

MAIN TEXT

Early career researchers (ECRs) are arguably one of the most vulnerable groups in the academic system (Laudel & Gläser 2008). Due to job insecurity, ECRs must jump between temporary positions while facing heightened pressure to produce in order to secure their future careers. An important challenge facing ECRs is thus to resist, improve upon, the prevailing “publish-or-perish” culture that has symbiotically developed alongside contemporary institutional performance expectations.

The academic community is increasingly cognisant of a major ethical issue with the current academic publishing system: the disparity between who pays and who profits. Certain publishers exploit the current publish-or-perish culture to achieve enormous revenues and profit margins by offering authors the opportunity to publish in high-impact-factor journals for an unreasonably high cost. Although technological advancements in the digital era of publishing have reduced the actual cost of publishing, publication fees charged to authors have only escalated (Khoo 2019). By charging authors fees of several thousands of dollars, and by charging libraries huge subscription fees, these publishers have generated billions in revenue (Aspesi *et al.* 2019) with the net income for stakeholders totalling in the millions (i.e. \$17 USD Millions in 2023 for Wiley^[1], \$1,634 USD Millions in 2022 for Reed Elsevier^[2]). Despite these profits coming from publicly-funded research and the donated time of academic peer reviewers and editors (Aczel *et al.* 2021), the wealth is rarely recirculated back into the academic community (Racimo *et al.* 2022). In some cases, the quality of the scientific peer-review process is even compromised in favour of publishing large quantities of papers (Bohannon 2013). These issues have created an unethical system (Racimo *et al.* 2022) that harms the fields of Ecology and Evolution.

Given their vulnerability, ECRs are disproportionately affected by these negative consequences. When publishing profits are not recirculated back into the academic community (i.e., through academic/learned

society affiliations), the provisioning of crucial opportunities for ECRs is reduced, which impedes professional growth and development. The facilitation of scientific conferences (e.g., the annual meeting of the British Ecological Society (BES); New Phytologist next generation scientists) and other opportunities that are instrumental to fostering burgeoning careers (e.g., the Strategies for Ecology Education Diversity and Sustainability program within the Ecological Society of America) depend on the recirculation of publishing profits, as does the funding of many awards, travel allowances, and research grants (e.g. the Early Career Researcher Award offered by Ecology Letters; the Tansley Medal offered by New Phytologist; BES small research grants, aimed at ECRs; Lewis and Clark Fund for Exploration and Field Research by the American Philosophical Society).

Furthermore, publishing charges take up a larger proportion of ECRs’ limited research budgets (Williams *et al.* 2023), reducing the amount of funding ECRs have to actually carry out research. In this viewpoint, we, the authors - a group of ECRs of different age and gender who have worked at western institutions in the fields of ecology and evolution - present our collective views on the current publishing landscape and its effects on ECRs. We propose adaptive and transformative actions that can be implemented by and for ECRs to work towards a more ethical publishing system.

Suggestions have been made on how to reorient the publishing system, which principally involve avoiding interactions with unethically profitable journals. The majority of these actions focus on changing the publishing practices of individual scientists as such recommending scientists to only publish in ethical journals or refuse to review for unethically profitable journals (Racimo *et al.* 2022). While these individual-level practices can be quick to implement, they can be ineffective at providing long-term, profound change if completed in isolation since they do not tackle the root causes of the problem (Abson *et al.* 2017; Meadows 1997). Actions that do target the systemic causes of the problem (e.g. shifting journals to more ethical business models or altering the peer review process) require the collective action of multiple individuals in positions of influence. Notable recent examples of collective actions highlight a growing demand for systemic change. For instance, the entire editorial board of the high-profile journal *Neuroimage* resigned in opposition to the journal’s high publication charges, referring to them as “unethical and unsustainable” (Sanderson 2023). Additionally, at the *Journal of Biogeography*, 85% of the associate editors went on strike against a range of Wiley editorial policy issues changes including inequity in the open access publication models, over-inflated growth targets and an increasing emphasis on transferring rejected manuscripts to ‘cascade’ journals (Williams *et al.* 2023). The strikers did not attain their desired outcomes from Wiley, thereby resulting in the resignation of the majority of associate editors.

In our social climate of increasing environmental and sociopolitical awareness, many ECRs feel a sense of responsibility to contribute to positive, systemic change in the publishing system. However, these aforementioned actions contain hidden costs for ECRs; the highly competitive job market presents a systemic barrier that prevents ECRs from taking actions to change the publishing system. The publishing choices of ECRs are highly influenced by the pressure to publish as frequently as possible and in high-impact journals, since this remains the prevailing measure of academic excellence that determines career advancement (McKiernan *et al.* 2019) despite extensive literature describing its inefficacy (“San Francisco Declaration on Research Assessment” 2013; Schmidt *et al.* 2021). This is especially true in ecology; roughly half of recent Assistant Professor hires at North American Doctoral Universities (Doctoral research universities with very high research activity) in ecology had published in *Science*, *Nature*, or *PNAS* at the time of hiring (Fox 2020). Though some of the highest impact journals in ecology and evolution are society owned, many of them are not. Thus avoiding publishing in such journals can impact the career development of researchers, which renders the cost of choosing ethical publishing options disproportionately larger for ECRs and has been shown to cause serious repercussions for their mental and physical health (University and College Union 2019). Therefore, for ECRs, taking action to oppose the unethical publishing system is associated with increased risk and sacrifice for those wishing to pursue an academic career, creating internal moral conflict.

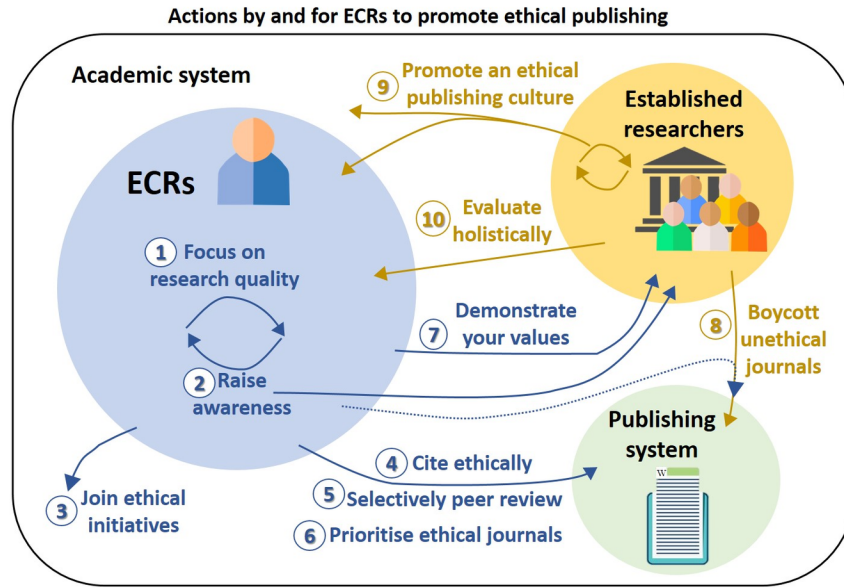


Figure 1 : Actions by and for ECRs to promote ethical publishing. Actions that can be implemented by ECRs (blue arrows and text) and established researchers (yellow arrows and text) for a positive change in the current publishing system. Arrows depict actions, coming from the group performing the action and pointing to the group/system they affect. The dotted arrow depicts a high risk action for ECRs. The academic system includes ECRs, established researchers, the publishing system, as well as other actors not pictured here that interact with academia, such as Non Governmental Organisations, universities, institutions, and stakeholders.

These issues beg the question: How can ethical change be effectuated in academic publishing, and how can ECRs contribute without risking their careers? Here we propose a portfolio of actions to promote positive change in the academic publishing system that can be safely implemented by ECRs, as well as supporting actions that can be implemented by established researchers (Fig. 1):

1. **Focus on research quality.** When evaluating research in discussions amongst peers, focus on the inherent quality of the research rather than where it was published to discourage the branding of a journal as an indicator of research excellence (“San Francisco Declaration on Research Assessment” 2013).
2. **Raise awareness.** Initiate discussion and speak about the issues with the academic publishing system and their possible solutions. This can be done within immediate networks (e.g. discussions within labs or departmental seminars), or more broadly (e.g. at conferences, blog/social media posts, etc.), and is particularly effective if done by established researchers with large networks.
3. **Join ethical initiatives.** Start or join initiatives that aim to change the current publishing system. For example, the San Francisco Declaration on Research Assessments (DORA) combats the misuse of journal impact indices, which can be linked to empowering unethically profitable journals (“San Francisco Declaration on Research Assessment” 2013). Another example is ‘Peer Community In’ (PCI), an initiative that provides free, high-quality peer review and publication of preprint manuscripts from a diverse range of disciplines, without the need for authors or readers to pay subscription or publication fees. PCI communities exist for both ecology and evolutionary biology as well as other related disciplines such as genomics or palaeontology.
4. **Cite ethically.** Cite scientific papers based on their inherent scientific quality rather than the prestige of the journal. When several articles can be cited, favour the one published in an ethical journal. This adaptive measure can reduce the disparity in impact factor between unethical and ethical journals.
5. **Selectively peer review.** Preferentially peer review for and accept editorial positions at ethical journals.

6. Prioritise ethical journals. When choosing between journals with similar impact factors. For example, in ecology and evolution, DAFNEE (Database of Academia Friendly jourNals in Ecology and Evolution, <https://dafnee.isem-evolution.fr/>) is a useful resource for informing this choice. This database is an initiative to improve transparency and raise awareness of ethical journals and lists ethical journals as those “owned or controlled by public institutions, non-profit organisations, or groups of scientists such as learned societies” (Racimo *et al.* 2022). It lists the topic, business model, academic partnership, publications fees, and impact factor of 475 journals (as of February 1st, 2024).
7. Demonstrate your values. Explain your ethical publishing strategy when applying for a position. By justifying why a journal’s ethics has been prioritised over its impact factor, this demonstrates your values to the selection committee, normalises this practice and will contribute to raising awareness.

In addition to the previous actions, more established researchers can implement the following:

8. Boycott unethical journals (which serves as an extension of actions #5 and #6). This can include ceasing to publish in these journals and resigning from editorial roles. A full boycott is a higher-risk action which we do not recommend for ECRs but for researchers with permanent positions. However, we acknowledge that the amount of risk that an individual chooses to take is highly personal. By extension, boycotting remains an available option for ECRs should they choose.
9. Promote an ethical publishing culture. This can be achieved by fostering a lab environment in which all members feel comfortable prioritising ethical publishing (see action #6) and educating mentees about the current challenges and pitfalls of the publishing system. This will provide ECRs with the knowledge and resources necessary to make informed publishing choices from the start of their careers.
10. Evaluate holistically. Use holistic researcher evaluation criteria and metrics (“San Francisco Declaration on Research Assessment” 2013; Schmidt *et al.* 2021). This will allow the academic community to dissociate from evaluations that rely heavily on impact factors, which feed the current unethical publishing system. This policy can be implemented by established researchers at different scales:
 - a. At the individual level, when serving on evaluation committees (e.g. hiring or grant panels). This can be achieved through panel discussions and prioritising requests to sit on evaluation committees where sufficient time is given to make a qualitative assessment of applicants’ research quality.
 - b. At the institutional level, when developing evaluation policies for hiring and promotion. For example, the French National Centre for Scientific Research (CNRS) now requires the evaluation of researchers based on: (i) the scientific quality of the candidate’s work (not the prestige or impact factor of the journal), (ii) a limited number of publications, and (iii) a larger diversity of professional activities—including preprints, data sharing, software production, training, innovation and management, among other criteria. Similar approaches are being discussed or implemented by research institutions across Europe including: UK Research and Innovation, the Dutch National Research Council, the Swiss National Science Foundation, the Luxembourg Research Council, and the Health Research Board Ireland (Hazlett 2021). To be truly beneficial, any changes to evaluation policy and the reasoning behind them should be transparent (e.g. Saenen *et al.* 2021).

CONCLUSION

The academic publishing system is in crisis, and systemic change is needed to make it more fair and equitable. While there is widespread motivation and desire to make large-scale publishing changes across the academic system, the task feels daunting. To address this, we suggest a set of actions to promote change that can be implemented by researchers across varying aspects of their academic lives—as readers, authors, reviewers, editors, evaluation committee members and colleagues. While many of the actions we propose are lower-risk and can be implemented by ECRs, these actions must be complemented by higher-risk ones undertaken by established researchers. While the main goal of these actions is to improve the publishing system in ecology and evolution, they will also address other inequalities, including the accessibility of research in general, and the evaluation of researchers for employment and promotion. Researchers in ecology and evolution could learn from fairer practices in other fields, such as the common use of alphabetical authorship order

in mathematics and economics (Waltman 2012), and the propensity to use preprint servers for studies in physics. Here we focus on researchers as the primary engine of change, yet governments arguably have a part to play to ensure public funding is not lost to the large profit margins of private publishing houses. We hope that through taking these suggested actions, and with the support of established researchers, ECRs will be instrumental in advancing changes that create a more ethical publishing system. As a last note, acknowledging the biases that may arise from our collective experience in the field of ecology and evolution, we embrace the opportunity for feedback and open discussions on this topic, especially from those whose backgrounds differ from the authors.

REFERENCES AND NOTES

- Abson, D.J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., *et al.* (2017). Leverage points for sustainability transformation. *Ambio*, 46, 30–39.
- Aczel, B., Szaszi, B. & Holcombe, A.O. (2021). A billion-dollar donation: estimating the cost of researchers' time spent on peer review. *Research Integrity and Peer Review*, 6, 1–8.
- Aspesi, C., Allen, N., Crow, R., Daugherty, S., Joseph, H., McArthur, J., *et al.* (2019). *SPARC* landscape analysis: The changing academic publishing Industry–Implications for academic institutions*. SPARC, Washington.
- Bohannon, J. (2013). Who's Afraid of Peer Review? *Science*, 342, 60–65.
- Fox, J. (2020). A Data-Based Guide to the North American Ecology Faculty Job Market. *The Bulletin of the Ecological Society of America*, 101, e01624.
- Hazlett, H. (2021). Findings from the health research board ireland on the implementation of a narrative CV. *DORA*.
- Khoo, S.Y.-S. (2019). Article Processing Charge Hyperinflation and Price Insensitivity: An Open Access Sequel to the Serials Crisis. *LIBER Quarterly: The Journal of the Association of European Research Libraries*, 29, 1–18.
- Laudel, G. & Gläser, J. (2008). From apprentice to colleague: The metamorphosis of Early Career Researchers. *High Educ*, 55, 387–406.
- McKiernan, E.C., Schimanski, L.A., Muñoz Nieves, C., Matthias, L., Niles, M.T. & Alperin, J.P. (2019). Use of the Journal Impact Factor in academic review, promotion, and tenure evaluations. *eLife*, 8, e47338.
- Meadows, D. (1997). Leverage points: places to Intervene in a System. *Whole Earth*.
- Racimo, F., Galtier, N., De Herde, V., Aubert Bonn, N., Phillips, B., Guillemaud, T., *et al.* (2022). Ethical publishing: how do we get there? *Philosophy, Theory, and Practice in Biology*, 14, 15.
- Saenen, B., Hatch, A., Curry, S., Proudman, V. & Lakoduck, A. (2021). *Reimagining Academic Career Assessment: Stories of innovation and change*. European University Association.
- San Francisco Declaration on Research Assessment. (2013). .
- Sanderson, K. (2023). Editors quit top neuroscience journal to protest against open-access charges. *Nature*, 616, 641–641.
- Schmidt, R., Curry, S. & Hatch, A. (2021). Creating SPACE to evolve academic assessment. *eLife*, 10, e70929.
- University and College Union. (2019). *Counting the Costs of Casualisation*. University and College Union, London.
- Waltman, L. (2012). An empirical analysis of the use of alphabetical authorship in scientific publishing. *Journal of Informetrics*, 6, 700–711.

Williams, J.W., Taylor, A., Tolley, K.A., Provete, D.B., Correia, R., Guedes, T.B., *et al.* (2023). Shifts to open access with high article processing charges hinder research equity and careers. *Journal of Biogeography*.

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^[1] <https://www.wsj.com/market-data/quotes/WLY/financials/annual/income-statement>

^[2] <https://www.wsj.com/market-data/quotes/RELX/financials/annual/income-statement>