

# Barriers to Publishing in the Ecological Sciences

## Intro

Scholarly publications are a critical metric in the hiring and promotion processes for academics and research professionals. Given its importance to determining who enters and succeeds in the scientific workforce, ensuring that the publishing process is equitable, fair, and inclusive of diverse identities is critical to creating a more diverse scientific community. In recent years, many journals have moved to an Open Access publishing model, typically financed through higher fees to the author. There is increasing concern that gains in accessibility of published research may come at the expense of equity and inclusion of authors, significantly narrowing the pool of who can publish. Therefore, the Ecological Society of America (ESA) conducted a community survey to explore barriers to full participation of a wide diversity of scientists in publishing research, with particular attention to potential impacts of the shift to OA publishing models.

## Methods

- The Ecological Society of America (ESA) conducted a community survey to measure barriers that authors of journal articles face during the publication process. Questions addressed all stages of publication: selecting a journal, submitting an article, peer review, publication and post-publication.
- The study was conducted from August 1 to September 14, 2022. Invitations were sent directly to researchers who have authored recently in an ESA journal, distributed via ECOLOG listserv, and promoted at the ESA annual conference.
- The survey was part of a larger project funded by the National Science Foundation [Award Number: 2209643] This research has been reviewed and approved by Brany IRB, Institutional Review Board [Protocol Number: 22-110-1258 email: mbrown@brany.com].

## Results

- 842 people responded from 64 countries, as follows: 60% U.S. or Canada, 17% Europe, 10% Central and South America, 10% Asia and Pacific, and 3% Middle East/Africa. The majority of respondents identify as Male (60%); 34% identify as female, 1% as non-binary and 5% preferred not to answer. Over half (55%) of those with <5 years experience in the field identify as female, but representation declines steadily with increasing experience (only 15% with 30+ years experience identify as female).
- The cost to publish OA was the most frequently reported barrier, identified by 63% of respondents. There were significant differences in the strength of the barrier (as reported on a scale from 1-5) by gender and geography. Women had a higher average barrier rating (3.85) for funding OA than men (3.55). Europeans reported the lowest barrier score (3.20), while those in the Global South reported the highest (3.98).
- Most respondents (59%) indicated that their last published paper was OA. Only 13% of them did because of a mandate from funders. Other reasons cited included: to maximize reach (60%), recommendation/pressure from the author's institution (22%), and because the journal chosen by the author only publishes OA (43%). 98% of respondents paid a fee to publish OA.
- Of those who did *not* publish OA, 73% cited a lack of funds as the reason. Respondents from Central and South America, and those with 6-10 years of experience in the field, were more likely to cite cost as the barrier to publishing OA.
- Multiple respondents noted in open comments that they are already reducing the number of papers they publish due to the cost associated with publishing. Most often, they are reducing the number of student-lead papers. Several also noted the challenge of financing papers after a grant had ended.

Authors are **not publishing** in Open Access Journals because of **cost**.

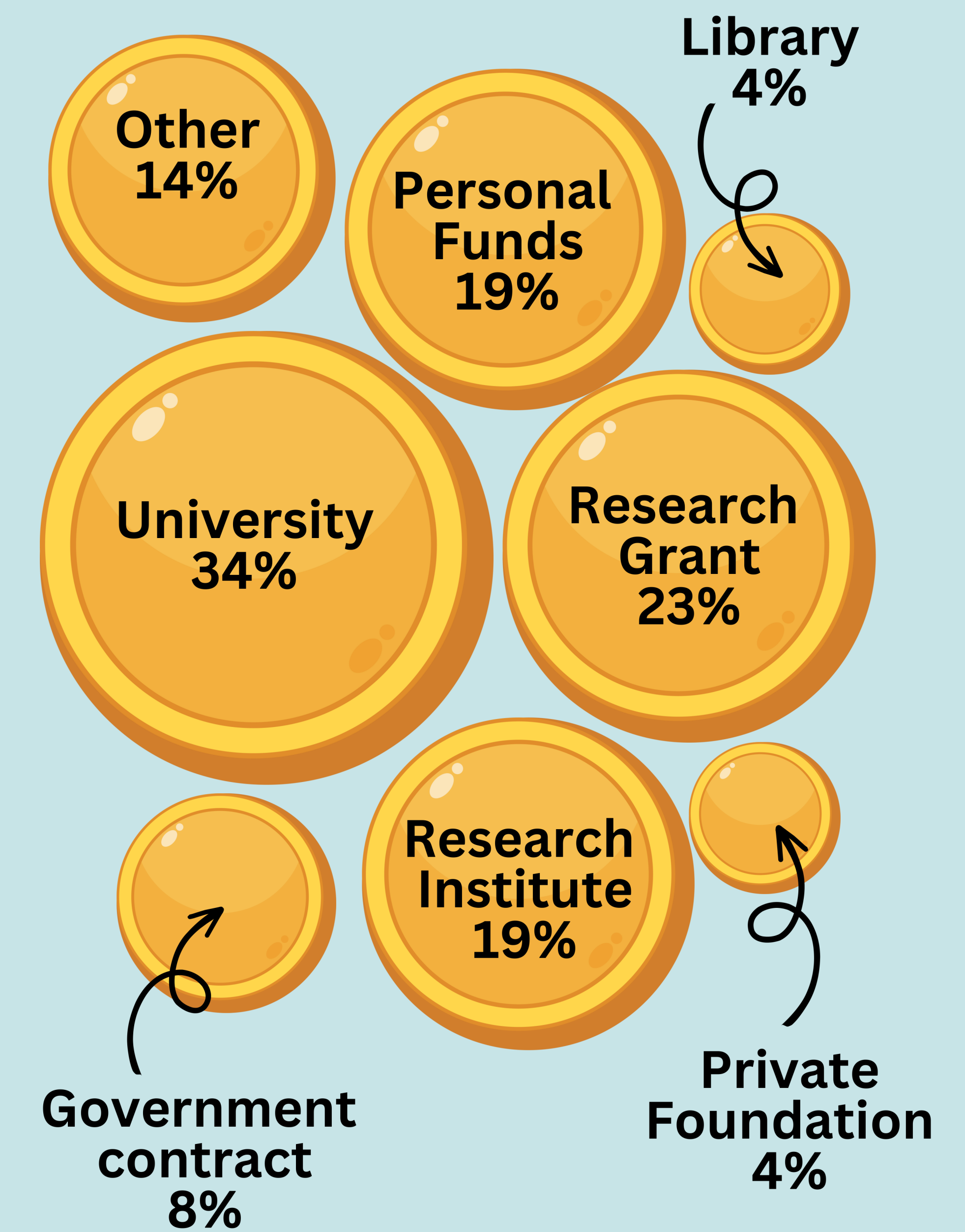
Of those that do, **~20%** are using **personal funds** to pay fees.

Who doesn't publish OA because of cost?



Female authors and authors from the Global South are more likely to cite **cost** as a barrier to publishing in Open Access.

## Who Pays?



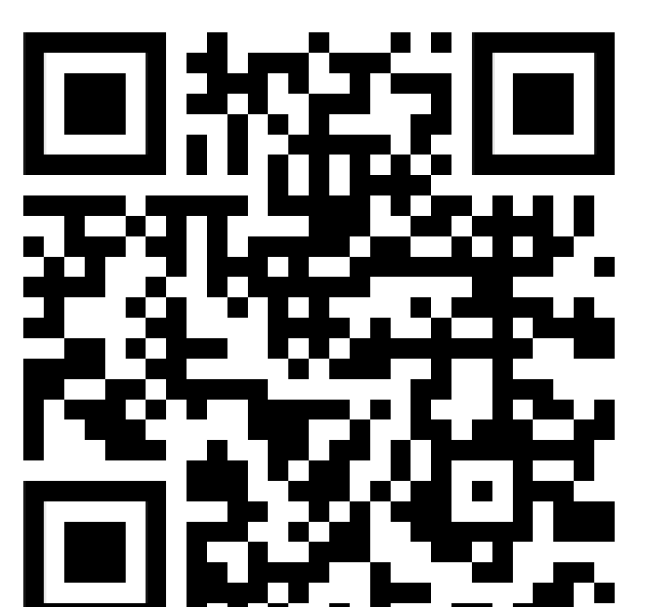
## Discussion

- The cost to publish is a major barrier to authors in the ecology community. While most authors had access to funds through grants or other institutional support, one-fifth of authors had to use personal funds to pay for their last publication.
- Authors who lack funding for OA fees can currently choose to not publish OA (i.e., in subscription journals). However, the rapidly increasing percentage of OA papers will necessitate more journals transitioning to OA-only, leaving authors who lack funding with few options for publishing their research. Our survey results indicate that the transition to OA will have disproportionate impacts on women and authors from the Global South.
- The transition to OA must consider the costs to authors and the unintended consequences on diversity, equity and inclusion. The ecological community must also think more broadly and creatively about how we communicate science – what qualifies as a publication, how we assign value to different types of publications, and how our professional incentive and reward systems manipulate that value.

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