

On The Record

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Repairing the scaffolding: women authors in *Paleobiology*

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Non-technical Summary

Despite decades of nearly equal numbers of men and women as students, women remain underrepresented in the ranks of professional paleontology. Scholarly publishing is a gateway to the senior ranks, and journals are the gatekeepers. We asked whether the publishing infrastructure of the Paleontological Society supports gender equity. We reviewed all papers published by the society's journal, *Paleobiology*, from its inception in 1975 through 2021. Over the journal's run, the number of authors per paper increased due to cultural shifts toward collaborative research and acknowledging technical and support contributions with coauthorship. These shifts opened the door to more women, particularly beginning in the early 2000s, when the first women editors held the keys to the society's journals. Despite these gains, women remain chronically underrepresented. Change that supports one underrepresented group generally supports all. Therefore, we offer four recommendations to open the publishing gate to all intersectional identities: (1) review manuscripts without author identifiers; (2) recruit more editors from diverse backgrounds; (3) democratize the review process by including more and different voices; and (4) gather data on author demographics at the time of submission and analyze and report on these data regularly to see who is and who is not passing through the publishing gateway.

Abstract

Women are underrepresented in paleontology. Despite more women students, representation at senior levels remains low. To advance professionally, scientists must disseminate their research through peer-reviewed publications. We examine gendered authorship patterns in *Paleobiology* to ask whether the publishing infrastructure supports the Paleontological Society's gender-equity goals. We reviewed all papers published in *Paleobiology* from its inception in 1975 through 2021. For each paper, we recorded each author, the author's position in the author list, and the total number of authors on each paper. We coded gender based on a combination of personal communication and pronouns used in publicly available information. We compared author demographics with anonymized membership data from the Paleontological Society. Over the journal's run, the number of authors per paper increased due to cultural shifts toward collaborative work and acknowledging student contributions with coauthorship. These trends contribute to proportionally more women authors, beginning in the early 2000s. Despite these increases, women remain chronically underrepresented. In 2018, 2019, and 2021, the proportion of women authors in *Paleobiology* paralleled membership in the Paleontological Society. However, in 2020, *Paleobiology* published fewer women authors than expected based on society membership. This echoes declines in women's scholarly productivity in the first year of the COVID-19 pandemic observed across many disciplines. We offer four recommendations: (1) practice double-anonymous peer review; (2) recruit editors from diverse backgrounds who invite reviewers with diverse backgrounds; (3) democratize manuscript review by selecting reviewers from a disaggregated reviewer database; and (4) gather and analyze demographic data for both submissions and publications.

Introduction

Women are underrepresented in science, technology, engineering, mathematics, and medicine (STEMM) broadly (Casad et al. 2021), and specifically in the geological sciences (Holmes et al. 2008) and paleontology (Stigall 2013; Plotnick et al. 2014; Diversity and Inclusion Committee of the Paleontological Society 2021). Seeking equity and diversity in the scientific community is more than just a moral imperative. Diversity invigorates science. Women bring different perspectives to scientific questions (Buckley et al. 2014). Diverse leaders produce innovative thinking and better mentoring for everyone in an organization (Dezsö and Ross 2012), but commonly receive less credit for those contributions (Hofstra et al. 2020). Diverse senior mentors also improve educational outcomes for all students (Snyder and Dillow 2012).

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PALEOBIOLOGY
A PUBLICATION OF THE
 PALEONTOLOGICAL SOCIETY

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In the geosciences (Holmes *et al.* 2008) and paleontology (Stigall 2013), women students proportionally outnumber women full professors and senior professionals and have done so by significant margins for decades. Optimists point to the many pathways—a “braided river”—individuals can take into STEMM careers (Batchelor *et al.* 2021) and suggest that the abundance of women students and assistant professors coupled with more time and intentional hiring will soon yield binary gender parity (Ranganathan *et al.* 2021). Pessimists note that the persistence of this demographic pattern over decades reveals a “leaky pipeline” (Alper 1993), in which individual career and personal choices drive continued underrepresentation across many diversity metrics (Holmes *et al.* 2008).

Women leave STEMM for varied and individual reasons (e.g., Ceci *et al.* 2014; Cech and Blair-Loy 2019; Hunter 2019; Almukhambetova *et al.* 2023). The focus on individual choices in the pipeline metaphor and individual paths in the braided river obscures systemic and structural constraints on advancement (Ranganathan *et al.* 2021). Calhoun and colleagues (2022) refer to the structural and institutional milieu that impedes women’s advancement as a “broken scaffold.” In this metaphor, the career scaffold should provide candidates the support of a sturdy structure as they climb through the ranks. The broken scaffold fails to provide this necessary support for people with marginalized identities (Calhoun *et al.* 2022). In our analysis, we consider a key component of the academic scaffold: peer-reviewed publication.

Active engagement in the scientific community—participation in professional conferences and dissemination of research through peer-reviewed journal articles—is essential for early-career professionals to advance from student to full professor. An analysis of meeting programs from 10 North American Paleontological Conventions (NAPC) spanning more than four decades showed that women constituted 2% of all abstract authors in 1969, compared with 58% in 2014 (Plotnick *et al.* 2014). This seems like progress. However, Plotnick and colleagues (2014) noted that increased participation by women came mostly through larger collaborations that acknowledged the contributions of students through coauthorship. Moreover, conference presentations alone will not earn an assistant professor tenure or a tenured professor a final promotion. An authorship analysis of *Palaeontology*, the flagship journal of the Palaeontological Association in the United Kingdom, found that in 2019, fewer than 20% of all authors were reported to be women, and this number had changed little in 20 years (Giles *et al.* 2020). Our study examines the history of authorship in *Paleobiology*, a journal of the Paleontological Society in the United States with an impact factor similar to that of the UK’s *Palaeontology*. We ask whether trends toward binary gender parity noted in 2014 NAPC conference presentations continued into peer-reviewed publication in the early 2020s.

Methods

We reviewed the entire run of *Paleobiology* from 1975 to 2021 (the last full year for which all issues had been published at the time we gathered data). For each article, we compiled all authors’ family names and initials, along with the year, volume, and issue in which the article was published. Unique names have been replaced with a random four-digit code in data provided in the Supplementary Material. We counted the number of authors listed for each paper and the position of each individual (single author, first, last, or among middle authors) in the author list.

To our knowledge, *Paleobiology* does not designate co-first authors, so author order was taken at face value as listed in the published journal. We scored gender based on personal communication with the author or an author’s personal pronouns used in public venues such as blogs, websites, email signatures, and social media. Although time- and labor-intensive, this approach reduces error inherent in automated gender recognition algorithms (Lockhart *et al.* 2023) and mitigates erasure of nonbinary and transgender people embedded in automated analysis of names (Keyes 2018). We could not verify gender for small proportion of authors (<0.1%); these were dropped. Our data did not include individuals who publicly identify using pronouns other than she/her and he/him. Therefore, our analysis uses the man/woman gender binary, while acknowledging that gender is a complex and fluid reality in the lives and careers of individuals (e.g., Black 2019; Marin-Spiotta *et al.* 2023; Rasmussen *et al.* 2023). We did not attempt to code other axes of intersectional diversity (e.g., race, ethnicity, citizenship, romantic or sexual orientation, age, or ability/disability status). Without self-reporting, accurately coding these identity markers would be impossible (see Lockhart *et al.* 2023).

To compare *Paleobiology* author representation to the field as a whole, we obtained anonymized member demographics from the Paleontological Society for 2018–2021. Paleontological Society data were recorded monthly. We chose to analyze data from October of each year, because this is the month in which the Geological Society of America holds its annual meeting and active members of the field are most likely to have renewed memberships in advance of this meeting. Over the 4 years for which we have data, the Paleontological Society has expanded its concept of gender in demographic data self-reported by members. For example, in 2018, members could indicate gender nonconforming and transgender in addition to the traditional man/woman binary (response options for each year provided in Supplementary Table 1). In 2022, members could select from nine gender categories in addition to man and woman. To simplify visualization and analysis for small-number categories, maintain anonymity in small-number groups, and allow consistent plotting across the years in which categories changed, we grouped all gender identities other than man and woman into the category gender diverse and reported that group separately from members who preferred not to answer (PNTA) the gender question. We acknowledge that this approach homogenizes important diversity in gender experience and expression. In choosing to group, we balanced this harm against the imperative to avoid revealing an identity of individuals in small-number categories who expected anonymity in the reporting of aggregate demographics. Transgender status/history was not explicitly considered in this analysis; transgender and cisgender men were included without distinction within the category of men, and transgender and cisgender women were included without distinction within the category of women (Supplementary Table 1).

Visualization and statistical analysis were performed in R (v. 4.2.3; R Core Team 2023) using tidyverse (v. 2.0.0; Wickham *et al.* 2019). Data and analytical code are provided in the Supplementary Material. To assess over- and underrepresentation of women and men authors in *Paleobiology*, we calculated standardized residuals from a linear model and plotted these, by gender, against publication year. In a given issue of the journal, if the number of male and female authors was equal, standardized residuals would fall on the zero line. Overrepresented gender categories plot above the zero line (positive standardized residual)

and underrepresented plot below (negative standardized residual). We compared *Paleobiology* author gender representation with gender demographics in the Paleontological Society membership using a χ^2 test for independence on a two-way contingency table compiling author and member counts for men and women. All analyses had 1 degree of freedom and were interpreted at $\alpha = 0.05$.

Results

Our dataset included 3601 records and 2078 unique authors, as a number of authors have published multiple papers in the journal. The total number of authors in a volume of *Paleobiology* has increased over time (Fig. 1A). The journal generally publishes about 10 papers per issue and 4 or 5 issues per year. Papers trended toward larger collaborative groups through time. For example, in 1975, there were 13 papers authored by a single

individual and 3 papers included 3 or more authors. In contrast, in 2021, there were 5 papers with single authors and 14 had 3 or more, with 5, 6, or 7 authors not uncommon. Figure 1A also shows an increase in the number of women authors beginning around 2000. When we normalized data to account for the increase in the number of authors (Fig. 1B), this trend remained. However, despite the increase in absolute numbers, women authors became increasingly underrepresented over time (Fig. 1C), because more men than women were added to collaborative groups.

The order of authorship can be decided in many ways. Some collaborative groups order authors alphabetically. In other cases, the first author is primarily responsible for the project’s intellectual development and for manuscript preparation, while the last author may be the lab head, grant principal investigator, or most senior collaborator. Irrespective of how they came to their

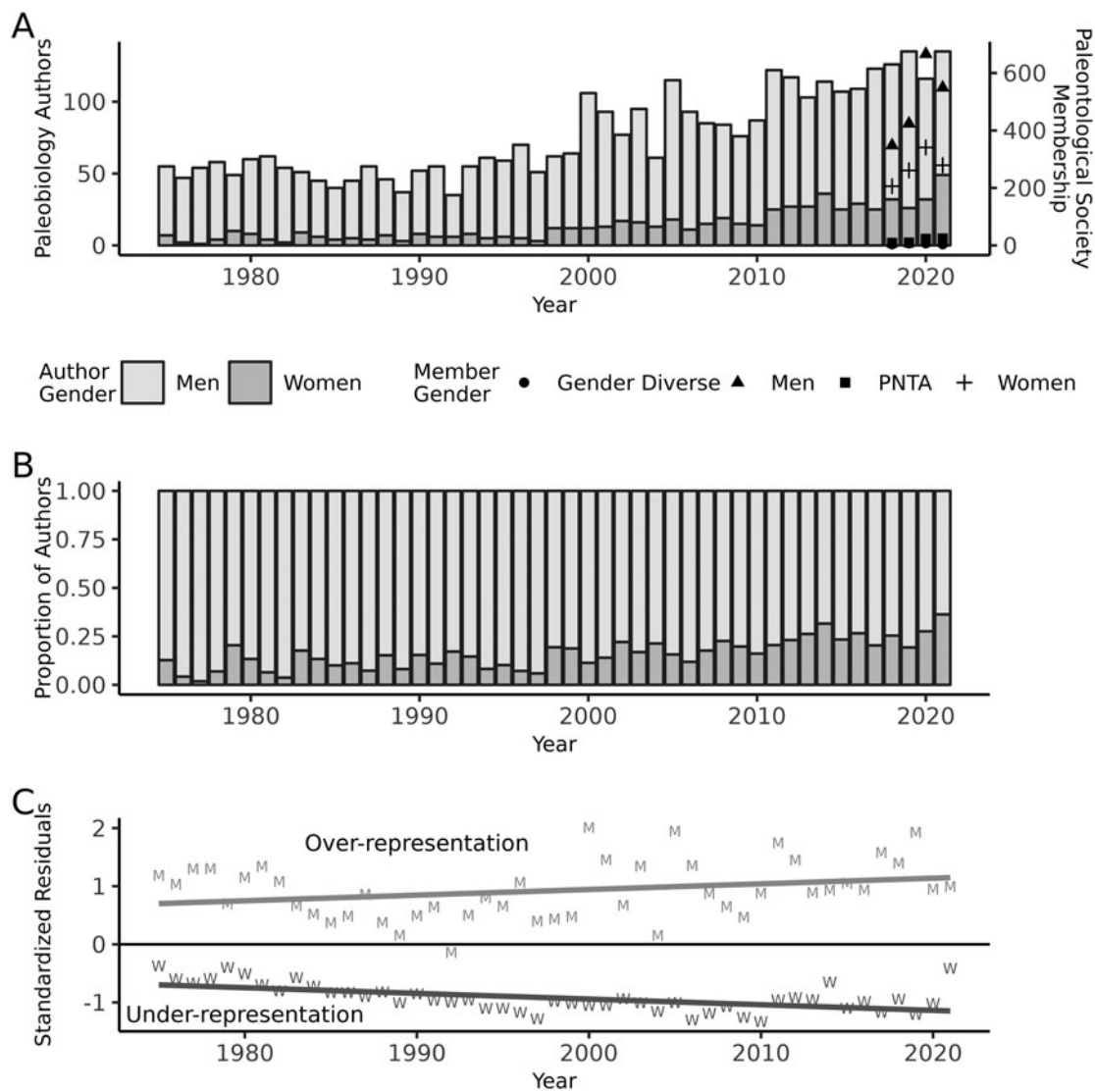


Figure 1. Gender (men and women only) of authors in each volume of *Paleobiology* 1975–2021. (A) Tallies of authors by binary gender overlaid on Paleontological Society membership for 2018–2021, the only years for which complete demographic data were available. Paleontological Society membership included a variety of gender descriptors (see Supplementary Table 1). We grouped transgender members with their authentic gender (e.g., transwomen with women), and all nonbinary markers into the category gender diverse. PNTA denotes those members who preferred not to disclose their gender. (B) Author gender normalized as a proportion. (C) Standardized residuals of a linear model describing the relationship between the number of authors, grouped by gender (M = men, W = women), in each volume across time. Negative residuals represent values below that expected for equal gender representation; positive residuals mean overrepresentation. Least-squares lines of best fit added to each gender group.

position in the author list, the first author is commonly listed in in-text citations and thus has greatest reputational visibility when the work is cited. Citation is important academic capital (Pereira and Díaz 2016; Pereira 2017; Fortunato *et al.* 2018; Roper 2022), so we look specifically at first-author representation. For first authors (Fig. 2A), the best-fit lines for both men and women are positive, showing overall increase in the number of unique authors through time. However, men are more common as first authors than are women, who remain consistently underrepresented (Fig. 2B). We note, however, that the 2021 volume achieved binary gender parity in first-author representation (Fig. 2B).

We also considered single authors (Fig. 2C). The number of men as single authors declined steadily throughout the *Paleobiology* run, while solo women authors remained

uncommon (Fig. 2C). By 2021, men and women reached parity in single-author representation (Fig. 2D), primarily because single-author papers had become rare.

To assess whether women's underrepresentation as *Paleobiology* authors reflects the demographics of the field, we compared authorship gender with the demographics of the Paleontological Society membership during those years for which we have data (2018–2021). In the χ^2 test for independence of categorical variables, the null hypothesis states that the frequencies of the two categorical variables are independent (uncorrelated). Therefore, a small p -value for this test leads us to reject the null hypothesis in favor of the conclusion that the gender frequency of Paleontological Society members and *Paleobiology* authors are correlated. For 2018 ($p = 0.02$, $\chi^2 = 5.76$, $N = 680$), 2019 ($p < 0.001$, $\chi^2 = 16.78$, $N = 820$), and 2021 ($p = 0.02$,

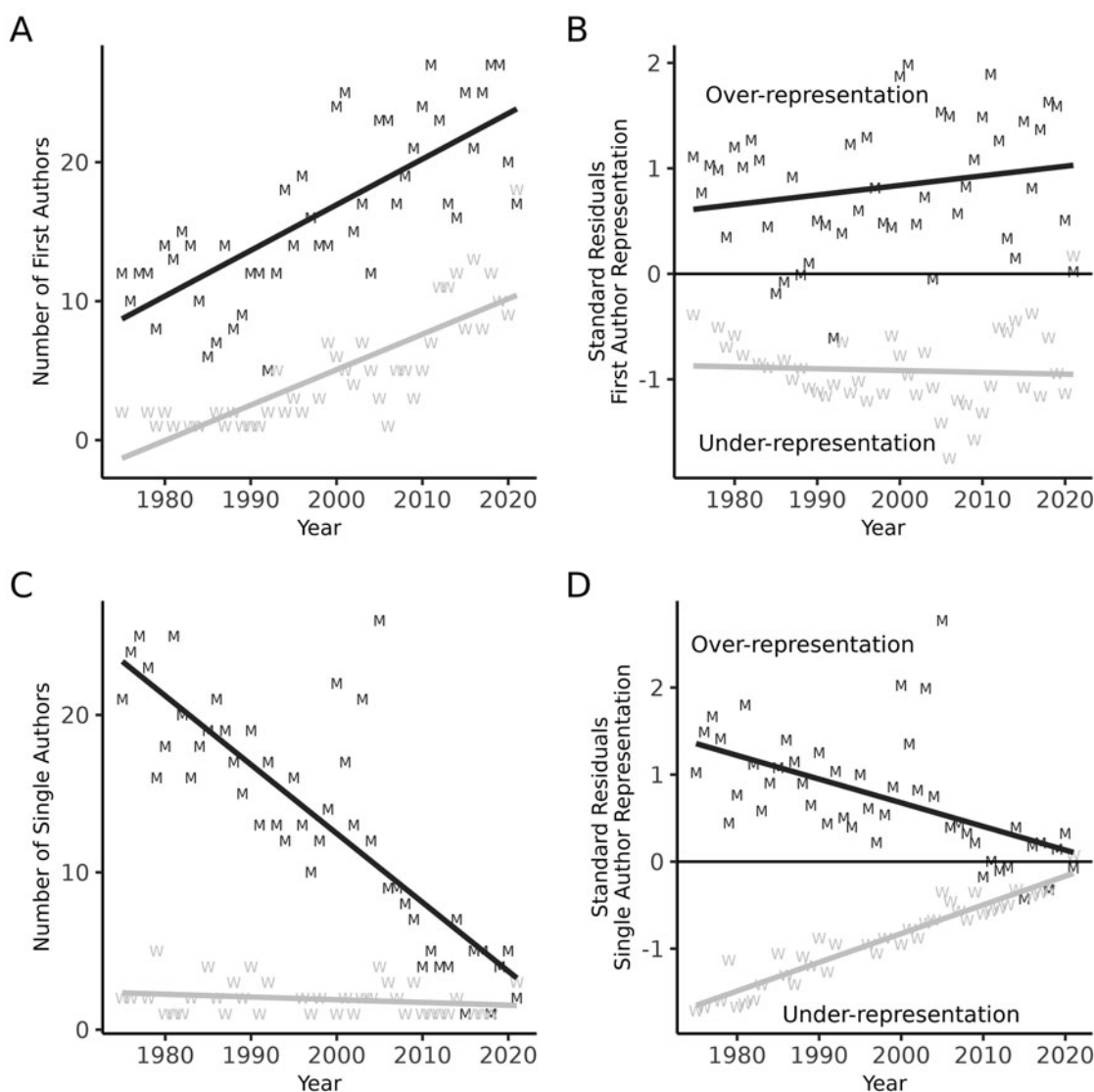


Figure 2. (A) Tally of first authors by gender for papers with more than one author. Lines of best fit represent least-squares linear models for each gender. (B) Standardized residuals of a linear model describing the relationship between the first authors in each volume across time. Negative residuals represent values below that expected for equal gender representation; positive residuals mean overrepresentation. Least-squares lines of best fit added to each gender. (C) Tally of single authors on paper in *Paleobiology* (1975–2021). Lines of best fit represent least-squares linear models for each gender. (D) Standardized residuals of a linear model describing the pattern of first authors in each volume across time. Least-squares line of best fit added to each gender. Negative residuals constitute underrepresentation; positive residuals mean overrepresentation. For all graphs, M = men; W = women.

$\chi^2 = 5.76$, $N = 680$), representation of women authors in *Paleobiology* paralleled their proportional membership in the Paleontological Society (Fig. 1A). However, in 2020 ($p = 0.21$, $\chi^2 = 1.58$, $N = 1123$), women were more underrepresented as authors than would be expected based on Paleontological Society membership. As first authors, women were consistently significantly underrepresented in most years (2018 $p = 0.53$, $\chi^2 = 0.40$, $N = 593$; 2019 $p = 0.24$, $\chi^2 = 1.39$, $N = 722$; 2020 $p = 0.91$, $\chi^2 = 0.014$, $N = 1036$), and marginally underrepresented in 2021 ($p = 0.05$, $\chi^2 = 3.93$, $N = 863$) in comparison to the Paleontological Society membership.

Discussion

For peer-reviewed papers in *Paleobiology*, our data show the same trends toward larger collaborations—and the inclusion of more women authors—reported in the analysis of NAPC abstracts (Plotnick et al. 2014). The trend toward collaborative research and the acknowledgment of student and technician contributions with coauthorship has been recognized across scientific disciplines, with both trends increasing the representation of women, particularly when the tenured team-leader is a woman (Bozeman and Corley 2004). Even with these advances, women remain chronically underrepresented as authors in the *Paleobiology* data, but this largely parallels underrepresentation of women in paleontology as documented by Paleontological Society membership. Underrepresentation is as much a problem within the field of paleontology as it is within the journal *Paleobiology*. Therefore, increasing the participation of women as authors is only one piece of the solution. In addition, women remain chronically underrepresented in the first-author position, suggesting that they are not moving from collaborator (providing or collecting data and earning a middle position in the author line-up) to project leader (first author) or lab head (last author), as had been hoped a decade ago (Plotnick et al. 2014).

Our data, which included the first 2 years of the COVID-19 pandemic, showed that women were more underrepresented as *Paleobiology* authors in 2020 than would be expected based on Paleontological Society membership. This echoes a well-documented pandemic publishing penalty for women in STEM (King and Frederickson 2021; Krukowski et al. 2021; Squazzoni et al. 2021). Journals in the Elsevier portfolio, for example, reported a surge in submissions in the early months of the pandemic (Squazzoni et al. 2021), possibly because teaching and service responsibilities changed for STEM faculty outside of medicine. However, women submitted proportionally fewer manuscripts than did men during this period (Squazzoni et al. 2021). In contrast, women took up more reviewing responsibilities (Squazzoni et al. 2021). Women with very young or school-age children showed even lower submission rates (Krukowski et al. 2021), with women attributing this decline to increased childcare and at-home education responsibilities during school and daycare closures (Caldarulo et al. 2022). In the *Paleobiology* dataset, we observed that binary gender parity recovered in 2021, as also noted by Ryan and colleagues (2023) in a survey of journals indexed by PubMed. We urge caution in interpreting this result. *Paleobiology* has a significant lag between submission and publication. For the 2020 volume, only the third and fourth issue might include manuscripts submitted after mid-March 2020, when many schools, colleges, and universities closed their doors and shifted instructional mode.

There is some reason for hope. More women are participating as authors (Fig. 1A, B) in *Paleobiology* now than ever before. More

women also appear as first authors (Fig. 2A); women equaled men as first authors for the first time in 2021 (Fig. 2B). However, as noted by one reviewer of this manuscript, equality cannot be claimed when virtually all of the growth in representation came from White cisgender women. This analysis remains silent on many other important aspects of a paleontologist's identity, such as race, ethnicity, citizenship, romantic or sexual orientation, and ability/disability status to name just some. In a voluntary survey of the Paleontological Society membership conducted in October 2022, out of 1300 members, 173 responded to a detailed demographic questionnaire. Eighty-five percent did not report identifying with a racial or ethnic group that is historically or currently underrepresented in STEM. Sixty-four percent reported being heterosexual/heteroromantic (straight) and 74% identified as non-disabled. This parallels the geosciences (Bernard and Cooperdock 2018) and STEM in general (Ginther et al. 2016; Clancy et al. 2017) in which there has been little progress on intersectional diversity over generations. While some might argue that a paleontologist's identity has little to do with their science, several decades of research proves otherwise (Barjak and Robinson 2008; Phillips et al. 2014; Swartz et al. 2019; Standring and Lidskog 2021). In his recent book, political scientist Matt Grossmann argues that social science improved when practitioners became more diverse and more self-reflective about their positionality and the questions that arose from their identity-based perspectives (Grossmann 2021). Natural science might take note.

The Paleontological Society leadership is working to keep diversity issues before the membership (Diversity and Inclusion Committee of the Paleontological Society 2021), including the ratification of a nondiscrimination code of conduct for members in 2019. However, rejecting discrimination is far from inclusion. Action is needed to repair many rungs of the scaffolding that will allow diverse paleontologists to climb to leadership in the field. We recommend that the Paleontological Society take four simple steps to further strengthen the scaffold at its journals.

Recommendations

Data from a variety of disciplines in STEM suggest that women—and members of other marginalized groups—face discrimination in the peer-review process (Wennerås and Wold 1997; Witteman et al. 2019; Hengel 2022). While the degree to which this occurs in paleontology awaits research, we recommend four practices shown to increase the representation of diverse authors.

Double-Anonymous Manuscript Review

In a standard single-anonymous review, the author's identity is known to the reviewer while the reviewer remains unidentified to the author. This allows reviewers to provide critical assessment of a manuscript without fear of retribution. However, if authors are known to the reviewers, biases—conscious or unconscious—based on reputation, gender, race, or other identity markers may creep in (Witteman et al. 2019). In 2001, *Behavioral Ecology* switched from single- to double-anonymous review. In a double-anonymous review, only editors—not reviewers—know the author's identity. Budden and colleagues (2008) examined the representation of women authors before and after the change at *Behavioral Ecology* and in five other ecology journals of similar impact factor and circulation that continued to practice single-anonymous review. They noted that the representation of

women increased for all journals (except *Journal of Biogeography*) during the period of study, but increased more than expected in *Behavioral Ecology* after the change in review process (Budden *et al.* 2008). *Behavioral Ecology* is published by the International Society for Behavioral Ecology (ISBE). Much like the Paleontological Society, ISBE is small (about 800 members), and many members likely know one another and are familiar with other members' research areas. Given that double-anonymous review has been demonstrated to address many kinds of bias among reviewers (Tomkins *et al.* 2017)—even within small fields—it should become standard practice for journals wishing to create an inclusive publication process.

Diversity among Editors

Peer-reviewed publication is central to professional advancement, and editors are the gatekeepers of peer-reviewed publishing. An analysis of the editorial board of *Functional Ecology* 2004–2014 showed that the majority were men, but women editors increased during the study window (Fox *et al.* 2016). With the increase in women on editorial boards, the number of women reviewers also increased, while outcomes of peer-review—process rigor—remained the same (Fox *et al.* 2016). Fox and colleagues (2019) expanded their review to six journals in ecology and evolution and found the same pattern across all journals they surveyed. Buckley and colleagues (2014) reported the same pattern in the *New Zealand Journal of Ecology*. They also noted that editors who were men tended to invite more men as reviewers and women invited more women (Buckley *et al.* 2014), probably representing bias in an editor's collegial network.

The relationship between the number of women editors and the number of women who submit manuscripts and who are eventually published remains unstudied. We note that the increase in women authors in *Paleobiology* began at about the time that the journal's first woman editor, Dr. Robyn Burnham, served (2004–2007). Coincidence is not causality; however, we hypothesize that greater participation of women as editors and reviewers may forge connections with the journal and encourage them and their collegial networks to consider the journal when preparing their own manuscripts for publication. Adding new voices—in addition to retraining old ones (Berg 2017)—is the most direct path to enhanced representation of all the intersectional identities that paleontologists hold. We note that in 2023, *Paleobiology's* editorial board is composed of three women and two men. The *Journal of Paleontology's* editorial board includes one woman and three men. We applaud the Paleontological Society's efforts and encourage them to continue to recruit and retain diverse editorial boards. In the same breath, we remind the Paleontological Society that adding to the service burden of already underrepresented groups by asking them to represent as editors and reviewers works counter to the goals of retaining highly qualified paleontologists of diverse identities. Real solutions require sensitivity, creativity, and continued commitment at all levels of the training and career hierarchy.

Democratized Review Process

A number of studies of editorial behavior in scientific publishing show that editors tend to choose reviewers who share their identities (Buckley *et al.* 2014; Fox *et al.* 2016, 2019). This is likely because reviewers are drawn, at least in part, from an editor's professional network. While this bias in reviewer selection does not

seem to influence the outcome of review (Buckley *et al.* 2014), different voices drive innovation and prompt new ideas (Díaz-García *et al.* 2013; Hofstra *et al.* 2020), which can improve feedback to authors and the quality of the published paper. After a review of Earth science journals, Pereira (2023) recommended a shared list of reviewer candidates from whom an editorial board can draw. Removing the reliance on an editor's colleague network facilitates editors selecting diverse reviewers. Having a stable of willing reviewers may solve the additional problem that women tend to decline invitations to review more often than do men (Fox *et al.* 2019), making it difficult for editors to identify diverse reviewers. For society-run journals like *Paleobiology* and *Journal of Paleontology*, surveys at the moment of membership renewal could efficiently populate a database of qualified and willing reviewers.

Co-reviewing, the process in which invited reviewers and their students, postdoctoral scholars, and other early-career affiliates all contribute to reviews, further expands the voices contributing to manuscript reviews. Co-reviewing has been well received in pilot and has become a standard practice at some journals (e.g., East *et al.* 2022). In much the same way that acknowledging the contributions of students with authorship expanded representation in authors, co-reviewing enhances representation in manuscript review. This practice also demystifies the review process for students and provides early-career scientists with mentored experience providing thorough and constructive reviews.

Data on Submissions and Published Articles

Data used in this analysis were gathered post hoc by combing through back issues of the journal and searching publicly available data for gender markers. The assignment of gender identity based on public-profile pronouns could be justly criticized for not directly recording an individual's authentic experience. Gathering self-reported information on author demographics at the time of submission will allow analysis of authorship trends along a variety of axes of intersectional identity. Gathering data at the time of submission will also permit assessment of who fails to pass through the gates to publication, a question that is currently unanswerable. The goal of peer review should be both rigor and equity. Rigor is assured through expert peer-review that is traditional in academic publishing. Equity cannot be assessed without data collected from authors at the time of initial submission.

The Paleontological Society has already done good work to describe and value diversity in our discipline. The next step is to pull out our wrenches and shore up the scaffolding that moves students enthusiastic about fossils, macroevolution, and Earth's history to the next generation of senior researchers, teachers, and mentors.

Author Positionality Statements

Nan Crystal Arens (she/her) is a White, cisgender, heteroromantic woman and professor in the Department of Geoscience at Hobart & William Smith Colleges (HWS). She was a first-generation college student with a learning disability that significantly slows her parsing and processing written language. HWS is a predominantly White, private undergraduate institution where faculty are encouraged to engage actively in scholarship, although both time and resources for this component of faculty work are extremely limited. HWS faculty in the natural sciences

boast a strong tradition of including undergraduate students in their research, as reflected here. Arens's advocacy for greater inclusion of historically marginalized people in STEM arises both from her experience as a woman in geology and paleontology and as the mother of two cisgender women who are just beginning to confront the inequities of the world.

Levi Holguin (he/they) is a person assigned female at birth, neurodivergent, queer, first-generation college student, and part of an immigrant family. They come from a low-income background and are a devotee of folk Catholicism. Many of his identity markers challenge normative standards in the several communities of which he is a part. This draws them into conversations regarding gender and intersectionality. He was motivated in this work by the desire to make change that will open opportunities for marginalized people.

Natalie Sandoval (she/her) is an undergraduate Latina attending a predominantly White, private institution as a first-generation student. She is cisgender and queer, does not live with a disability, and from a low-income immigrant family. Growing up in an immigrant Latino family, she is no stranger to forced gender roles and machismo, which draws her to gender studies and equity issues. She has done previous research on gender representation in STEM careers and feelings of belonging on campus. Her previous research also includes family planning and contraceptive use. She is a community advocate through the National Diversity Coalition and seeks opportunities to improve gender equity, accessibility, and human rights through community advocacy and policy change.

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Competing Interests. The authors declare no conflicts of interest.

Data Availability Statement. Data available from the Zenodo Digital Repository: <https://doi.org/10.5281/zenodo.8384489>.

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