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Conservation Biology

CONTRIBUTED PAPER

Representation in conservation publishing

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Abstract

There is a persistent underrepresentation of marginalized voices in academic literature, including that for ecology and conservation. Such exclusion hampers career progression, perpetuating disadvantages for historically marginalized groups in the field, with implications for the direction of conservation research. Diverse perspectives foster novel thinking, strengthen innovation, and ensure research reflects the full spectrum of challenges faced by communities. To assess this underrepresentation, we analyzed self-reported demographic data for authors of scientific articles to explore demographic trends and how they shifted between 2010 and 2020. The journals chosen were listed as conservation-related by three or more of the five major journal indices. We used the same dimensions of diversity to assess editor demographics in 2021. In total, 2152 authors and 241 editors completed the survey (response rate: 21.5% authors; 29.5% editors). We found that overall author diversity across multiple traits (Rao's Q) increased between 2010 and 2020. Most notably, the representation of women increased from 29.5% to 35.6% of authors. However, women from lower-middle- or low-income countries still represented <1% of authors, and most dimensions of diversity saw little change over a decade. In 2020–2021, 80% of authors and 76% of editors self-identified as White; over three-quarters of respondents across years lived in high-income countries; and nationals of three countries (the United Kingdom, the United States, and Australia) represented 34% of authors and 49% of editors (5% of the global population). Our study findings highlight the importance of considering intersectionality, as respondents spanning multiple marginalized identities were disproportionately underrepresented. Overall, our work highlights how a lack of representation continues to characterize academic publishing in conservation and ecology but shows signs of positive change. There is evidence that gender-based initiatives are having a positive effect, yet more work is needed to enhance representation across other dimensions of diversity.

KEYWORDS
disability, diversity in science, equity and inclusion, gender, intersectionality, race

INTRODUCTION

By definition, diversity is a cornerstone of biodiversity conservation. However, the field has experienced a widespread, long-standing, and chronic deficit of diverse representation in its ranks (Hughes et al., 2023; Liévano-Latorre et al., 2020; Maas et al., 2021; Nuñez et al., 2019). Reflecting broader patterns in academic publishing (Lerman et al., 2022; Liu et al., 2023), the persistent underrepresentation and exclusion of marginalized voices in ecology and conservation have prompted growing calls to diversify representation across the multiple dimensions of human identity and to transform conservation into a more ethical and inclusive discipline (Cumming et al., 2023; Rosa et al., 2024). These shortcomings continue to challenge the discipline's equity, diversity, and inclusion (EDI) aspirations and, importantly, may be undermining its capacity to address the ongoing loss of biological diversity (Green et al., 2015; Price et al., 2023).

Despite some evidence of increasing representation in the ecology and conservation literature (Zettlemoyer et al., 2023), mounting research highlights deep-rooted and systemic biases. For instance, women are estimated to represent only 11% of the 100 authors who have published the most articles (in 13 journals) in ecology, evolution, and conservation (any author position; Maas et al., 2021) and 14% of "the top [2000] ecologists in ecology and evolution" (ranked based on *D*-index; Hughes et al., 2023), with authorships heavily skewed toward male authors (Grosso et al., 2021). Geographic disparities in paper submissions and acceptance rates are also pronounced and deeply entrenched (Nuñez et al., 2019) (e.g., 60% of the manuscripts submitted to the *Journal of Applied Ecology* have corresponding authors from just seven countries [country of occupation: the United States, the United Kingdom, Australia, Canada, Germany, France, and Spain]). The same seven countries account for 80% of the top-publishing authors across 13 leading journals in ecology, conservation, and evolution (Maas et al., 2021), with the first three representing over half of all authors (Hughes et al., 2023; Maas et al., 2021).

Following submission, journal editors are the first potential gatekeepers in the publication process. Primack et al. (2019) found that editors for *Biological Conservation* desk-reject approximately half of the manuscripts assigned to them (i.e., reject the paper before review). The decision to reject research (from editors and reviewers) is expected to be based on scientific content, including the perceived novelty, methodological rigor, or fit with the journal's scope, rather than external factors such as the author's gender, nationality, age, or ethnicity (Campos-Arceiz et al., 2015). However, nonresearch factors, such as failure to adhere to Western academic writing conventions, English language proficiency, or explicit discrimination, can

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exclude potential authors from publishing (Amano et al., 2023) or extend the duration of the review process (Alvarez-Ponce et al., 2026; Liu et al., 2023). Strategies to reduce these barriers, such as double-blind review (Budden et al., 2008; Fox et al., 2023) and increasing the diversity of those within editorial processes, are being proposed and implemented by certain journals (e.g., *Functional Ecology*; Fox et al., 2023; Mahdjoub et al., 2022). However, women remain underrepresented on journal editorial boards, representing only one in five editors-in-chief for conservation/ecology journals (Liévano-Latorre et al., 2020), and men make up 80% of invited reviewers (Lerback & Hanson, 2017).

Quantifications of diversity typically focus on more visible or assignable traits, such as gender and geographic location (Maas et al., 2021; Nuñez et al., 2019), whereas less easily quantifiable dimensions such as race, ethnicity, and sexual orientation are (somewhat understandably) less commonly included. However, as suggested by evidence from the wider academic literature (e.g., far fewer people of color act on editorial boards across academic publishing; Liu et al., 2023), the disparities are unlikely to be less pronounced. In addition to the sensitivity and wariness involved in approaching difficult conversations, efforts to analyze the demographic and identity-related composition of the field are further complicated by idiosyncrasies associated with geographic scale, which often hamper the distinction between local patterns of diversity and broader, global disparities (Khelifa & Mahdjoub, 2022).

We used self-reported demographic data from authors in conservation-related journals to describe demographic patterns in 2010 and 2020 and to evaluate changes across the intervening decade. We assessed variation across multiple dimensions, including age, gender identity, sexual orientation, racial identity, nationality, and education. We also assessed the representation of different identities on these journal editorial boards in 2021. By tracking how diversity has or has not changed over time, this study evaluated whether conservation publishing is becoming more inclusive to help inform future EDI initiatives. We acknowledge the complex and problematic legacy associated with the term race. Nevertheless, we argue that racialized perceptions continue to shape experiences and represent an important source of discrimination not necessarily captured by other dimensions of identity (Avery et al., 2022; Song, 2018).

METHODS

Participant selection process

Eighteen conservation journals were categorized as conservation-related by at least three of five major journal indices (Appendix S1). Thus, our sample focused on internationally indexed journals, which are likely to be biased toward English (see Discussion). A list of articles published in 17 of these journals in 2010 and 2020 was created (excluding *Conservation Science and Practice*), and from this, assuming random sampling, a 95% confidence interval (CI), and a 5% error margin, we calculated a representative sample of articles from each journal. A list of authors from these sample articles was compiled (n = 13,318). All email addresses were collected manually through publicly available sources (e.g., journal websites, academic publications, and academic profiles, such as ORCID and ResearchGate). We used the same process to obtain the contact details for the editors of the 18 conservation journals in 2021. Editors represented all members of a journal's editorial board, including the editor-in-chief, senior editors, associate editors, handling editors, and subject/regional editors. The email collation occurred between April and July 2021. We acknowledge survey participation can differ across demographic groups, leading to respondent bias (Leone et al., 2022), and explore this limitation in the Discussion section.

Online survey

Prior to the online survey, this project was reviewed by, and received ethics clearance through, a subcommittee of the University of Oxford Central University Research Ethics Committee (Reference number R76943/RE001). Informed consent was obtained from all participants prior to data collection, and all responses were anonymized.

The initial list of authors represented 13,318 authors. Of these, we removed duplicates and those with no contact information available (10,276 authors; removed 3042). The resulting list of authors (n = 9994; 282 emails bounced) and journal editors (n = 816) were invited by email to respond to an anonymous online survey. Authors and editors were emailed three times, including an initial email and two follow-up reminders. All emails were sent from the academic email account of the senior author. The author survey was conducted from 1 November 2021 to 6 January 2022, and the journal editor survey was conducted from 3 May 2022 to 8 June 2022. The surveys were hosted by SmartSurvey (www.smartsurvey.co.uk) in English. The data collection process was the result of an effort by 23 researchers who were nationals of 15 countries, and the survey questions were designed following an extensive consultation process (Appendix S2). Both surveys included common demographic questions (e.g., age, nationality, country of residence, race, gender identity, and sexual orientation). The demographic questions were followed by questions relating to the participant's conservation research experience (Appendix S3). As survey responses were anonymous, authors were also asked to select which conservation journals they published in during 2010 and 2020 from a list, and journal editors were asked to select which journals they had edited in 2021 from a list.

The author survey was piloted using a sample of researchers working in fields outside of conservation to prevent duplicate responses. It was sent to 56 nonconservation researchers, and we received 39 responses. The pilot included an earlier version of the survey and a question asking for feedback on the survey. Responses were anonymous, and the feedback was incorporated into the final version of the survey.

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TABLE 1 Description of the dimensions of diversity explored for authors and editors of conservation-related journals, including the final variables (Rao indicates whether a dimension was included in the Rao-quadratic entropy analysis, and data for World Bank income group sourced from World Bank [2025]—with major processing by Our World in Data).

Dimension	Type	Variables	Rao
Age	Ordinal; five variables	60+, 50–59, 40–49, 30–39, 18–29	0
Nationality, by country	Categorical; 105 variables	103 countries, one category for unknown, and one category for respondents with 2 or more nationalities (grouped as dual nationals).	0
Nationality, by World Bank income group	Ordinal; four variables	High income, upper-middle income, lower-middle income, low income	1
Residence, by region	Categorical	Europe & Central Asia, North America, Latin America & Caribbean, East Asia & Pacific, sub-Saharan Africa, South Asia, Middle East, and North Africa	1
Residence, by World Bank income group	Ordinal; four variables	High income, upper middle income, lower middle income, low income	0
Migration	Binary	Migrant, nonmigrant. Migrant status was determined based on whether the respondent had listed their nationality as their country of residence.	1
Racial identity	Categorical	Asian, Black, Latino, Middle East and North Africa (MENA), White, Native/Indigenous/Traveler communities, Mixed, Other not listed	1
Gender identity		Man, woman, other gender identity (e.g., nonbinary)	1
Trans identity	Binary	Cisgender, transgender	1
Sexual orientation	Binary	Straight/heterosexual or LGB[T]QIA+ (representing gay or lesbian, bisexual, fluid, queer, asexual, demisexual, and options not listed)	1
Disability	Binary	Nondisabled, disabled. A disability here is defined as any physical, mental, cognitive, or sensory disability or impairment reported.	1
Education	Ordinal; three variables	PhD or higher, master's or bachelor's degree, or other	0
Parent/caregiver education	Ordinal; three variables	University or equivalent, professional qualification (formal education post 15/16 years old including vocational), and Other (primary, lower secondary, or alternative/nonformal education)	1
Number of dependents	Numerical	Number of dependents; outliers were removed, i.e., greater than 99 dependents ($n = 3$).	0
Work sector	Ordinal; four variables	Academia, academia and other, other, and not applicable	1
Religion	Categorical; 15 variables	Atheist, agnostic, no religion/spiritual practice/worldview, spiritual but not religious, animist, Bahá'í, Buddhist, Christian, Hindu, humanist, Jewish, Muslim, polytheist, Sikh, and other	1
Political orientation	Categorical; 10 variables	Far left, left, Center-left, centrist, center-right, right, far right, apolitical/no political orientation, other, green/sustainability. Green/sustainability represents respondents who did not align with any orientation but expressed their political views aligned with environmental issues.	1

Dimensions of diversity

Overall, we collected information for 14 dimensions of diversity, including categorical variables and count variables. Several dimensions were converted into additional dimensions, representing a total of 17 dimensions (Table 1; Appendix S4). Country of residence was grouped into the World Bank's income groups for 2010 and 2020 (World Bank, 2025). As Venezuela has not been classified since 2019, we used the most recent classification. For editors, we used the classifications from 2020. For the analysis, we grouped nationality in the same way. As a subset of respondents reported being dual or tri-nationals, these respondents were classified into the income group of the country with the highest gross national income (i.e., a dual national of Italy and Libya would be classified into the high-income group). Ordinal categorical data were converted into numerical variables and standardized between 0 and 1 to allow comparisons with similar weighting. Descriptive statistics were obtained from the results of both surveys using R (Version 4.4.2; R Core Team, 2024). Several variables were also excluded from the statistical analyses to prevent pseudoreplication but were reported in the summary descriptions (e.g., residence by income group). We reported descriptive statistics for age, education, and number of dependents for 2020 only, as these represented age, education, and dependents at the time of the survey, rather than at the time of publication. Therefore, we did not include them in the statistical analysis or provide summaries for 2010 (see

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Table 1 for the final 12 dimensions included in the statistical analyses).

To assess whether there was bias related to which authors responded to the survey, we compared the primary affiliation of the complete author dataset (n = 10,270; including email bounces and country of affiliation missing for six authors) with the country of residence for authors who completed the survey (n = 1665). Although this was not necessarily a direct comparison (i.e., an author's primary affiliation may not be their current country of residence), this approach enabled us to assess the likelihood of response bias across countries while maintaining respondent anonymity.

We used descriptive statistics rather than statistical modeling to compare the proportions of author traits between 2010 and 2020. This approach prevented a misinterpretation of results, particularly given differences in sample sizes between the 2 years and the partial overlap of respondents. Modeling would have required assumptions about the relationship between time points that may not have held, especially as the data points were a decade apart and little is known about the trends or events that occurred in the intervening years. Descriptive comparisons also offered a more transparent way to communicate observed changes across all traits without overstating certainty or implying continuity that could not be verified.

To measure the collective diversity of author dimensions, we calculated Rao's quadratic entropy (Rao's Q). Rao's Q is a measure of diversity that accounts for both dimension variation and the relative abundance of dimension combinations (Rao, 2010) and is generally used when studying ecological communities. Rao's Q is based on average distances between people, meaning the results will show higher values if the data are more diverse on average. We chose this approach for its ability to handle the complexity of the data without the need to transform it into more complex representations. Rao's Q was calculated using the Gower dissimilarity metric that allows mixed data types (i.e., ordinal, categorical, and binary). The dissimilarity matrix was calculated using the function gower() from the R package BAT (Cardoso et al., 2015), performed for complete responses (authors = 1391; editors = 146). Complete responses excluded respondents who chose no response to any question. Given that Rao's Q assumes stable dimensions, we excluded responses where nationality by World Bank income group was reclassified between 2010 and 2020 (n = 12 [<1% of responses]). To assess uncertainty, we implemented a bootstrap resampling procedure with 1000 iterations. Rao's Q was calculated using the rao() function for the overall diversity of authors publishing between years (2010 and 2020), the diversity of authors by conservation journal between years, and the diversity of journal editors between years. The distribution of bootstrapped Rao's Q values was summarized by extracting the 2.5th, 50th (median), and 97.5th percentiles. Differences were considered significant if there was no overlap in the 95% CIs of one year and the median value of the following year. Journals with sample sizes <10 per year were removed (Appendix S1). We acknowledge that characteristics such as race and gender are legally and socially recognized as protected attributes and that dimensions of identity, including religion, shape the experiences of different communities in distinct ways not captured by this approach (see Appendix S9 for more information).

RESULTS

Conservation research authors

The online survey was sent to 9994 conservation research authors and had a 21.5% response rate (total responses = 2152). We removed 487 author respondents, which included respondents who selected "no response" when asked whether they had published in the target journals (n = 224). These also included 263 respondents who claimed not to have published in any of the 17 journals in either year, despite being contacted because of their publishing record. Overall, this represented 1665 respondents, with 25.7% published in both years, 55.3% published only in 2020, and 19.0% published only in 2010.

In 2020, most author respondents (hereafter referred to as authors) resided in Europe and Central Asia (43.5%) or North America (21.3%), followed by Latin America and the Caribbean (15.9%) (Figure 1). More specifically, most authors in 2020 resided in the United States (16.8%), the United Kingdom (10.5%), and Brazil (8.6%). We saw marginal increases in the proportion of authors residing in Latin America and the Caribbean (+2.7%) and East Asia and Pacific (+1.3%) regions between years. However, there was no difference (<1%) for authors from South Asia, the Middle East and North Africa, or sub-Saharan Africa (Figure 1). The United States and the United Kingdom showed less than 1% variation between years. There was little difference in the proportion of authors living in high-income (75.2% to 75.7%), upper-middle-income (17.6% to 18.5%), and lower-middle-income countries (4.8% to 4.9%), whereas authors from low-income countries decreased from 2.3% (representing 10 countries) to 0.9% (five countries) (Figure 2). Eighty-three percent of authors resided in a country where they were national citizens in 2020 (a synopsis of each author's information is provided in Appendix S4).

In 2020, most authors were 30–39 (30.2%) or 40–49 (33.3%), with <4.4% being 29 or younger (Figure 2). Author nationality largely reflected author residence, with less than 1% variation between years for the United States and the United Kingdom and a 2.4% increase in Brazilian nationals. When asked which option most closely described their race, 79.8% of authors identified as White, 7.2% as Asian, 4.1% as mixed, 3.1% as Latino, 1.9% as Black, and 0.2% as part of Native, Indigenous, or Traveler communities (Figure 3). There was little variation in racial representation between years, with categories varying by 0% to 0.8% (Figure 3). Additionally, 1.6% chose not to respond to this question.

Overall, most authors self-identified as men (63.8%), 35.1% as women, and 0.7% as another gender (including nonbinary and pangender); 98.7% of authors identified as cisgender and 0.2% as transgender. The proportion of women increased 1.2-fold from 29.5% in 2010 to 35.6% in 2020 (Figure 3). Most authors identified as straight or heterosexual (88.6%), and 8.9% identified as LGB[T]QIA+. In addition, 8.2% of authors

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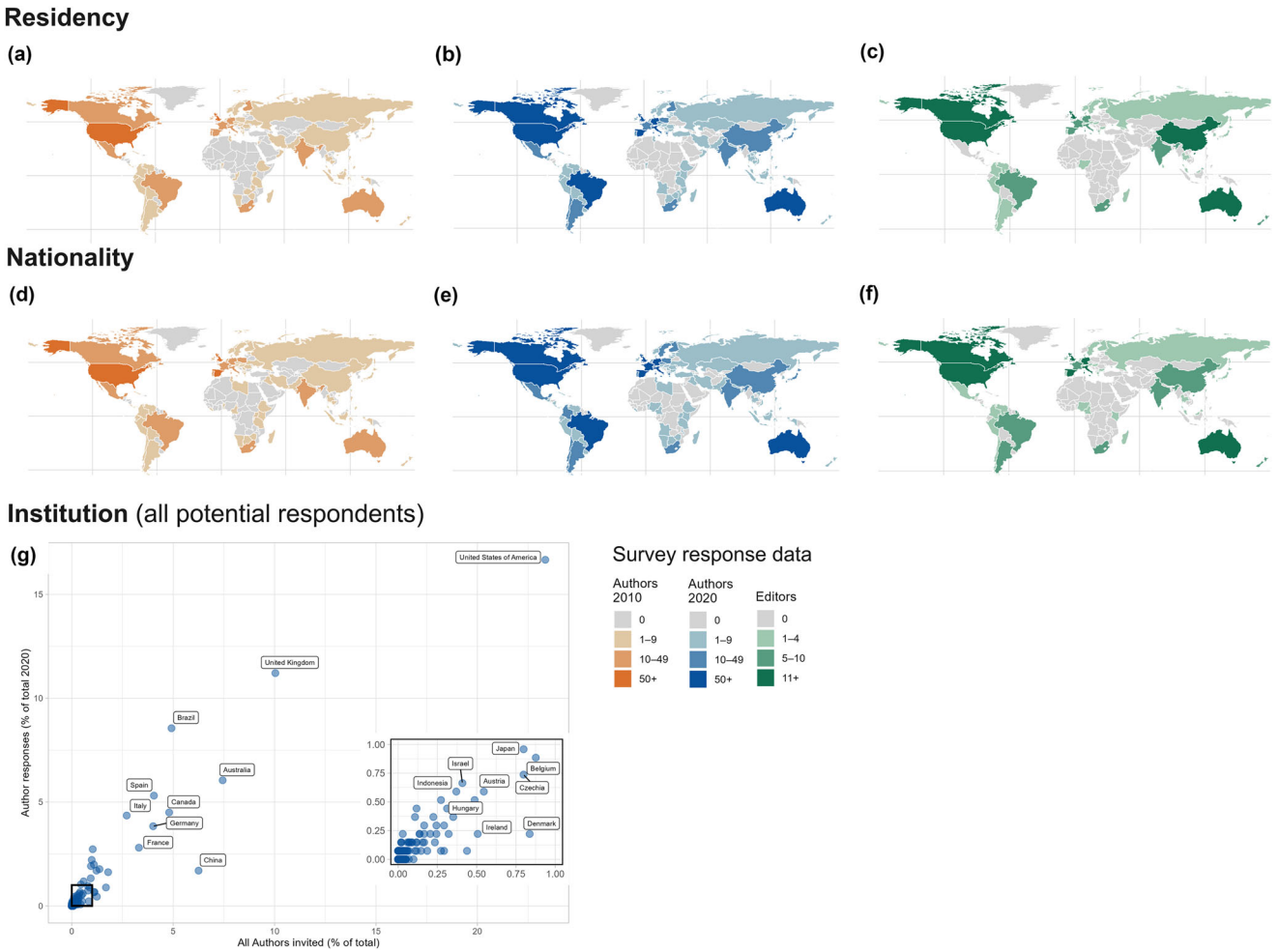


FIGURE 1 Geographic distribution of authors and editors between years in terms of where they live and their nationality. Survey response data: residency of authors in 2010 (a; $n = 745$) and 2020 (b; $n = 1348$) and editors in 2021 (c; $n = 221$). Nationality of authors in 2010 (d) and 2020 (e) and editors in 2021 (f). The first institution of all authors identified as publishing in conservation journals in 2010 and 2020 (g; $n = 10{,}270$), who may or may not have responded to the survey request compared with author residency of those who published in 2020.

reported a physical, mental, cognitive, or sensory disability. There were only marginal differences in the representation of different sexual orientations and in authors with a disability between years (Figure 3).

On average, in 2020, authors had 1.2 dependents, with 36.8% of authors having no dependents (Figure 4). In 2020, 87.5% of authors held a PhD. There was little difference in the level of education of the authors' parents between years, except for those with a professional qualification (−2.5%). There were only marginal differences in religious identities (Figure 5) and most political ideologies between years. However, there was a 4.7% increase in those identifying as left compared with a 2.1% decrease in those identifying as center-left, and a 1.1% decrease in those identifying as center-right. There was a 2.1% increase in authors working in academia and another sector in 2020, and a 1.9% decline in those working in academia exclusively.

The largest overall author demographic for 2020 included men (15.1%) and women (12.5%) who identified as White, cisgender, and heterosexual; had no disability; were educated to the PhD level or higher; had parents who attended university or an equivalent; and were residents of a high-income country (2020 = 30.3%, $n = 408$ out of 1348). There was no meaningful increase in women from lower-middle- or low-income countries, with 0.7% of authors in 2010 and 0.95% in 2020. Strikingly, authors who self-identified as Black, Middle Eastern and North African (MENA), or as part of Native, Indigenous, or Traveler communities represented only 2.8% of authors in 2010 and 2.9% in 2020, largely from high- or upper-middle-income countries. In 2010, 7.9% of all authors from high-income countries reported a disability compared with 9.1% in 2020. Only 1.9% of all authors from lower-middle- or low-income countries reported a disability in 2010 and 1.2% in 2020.

When comparing all potential author respondents (i.e., authors invited to participate in the survey), the country of the author's institution (or first institution) largely reflected the residence of authors who responded to the survey (Figure 1). Most author institutions were based in the United States (23.3%), the United Kingdom (10.0%), Australia (7.4%), China (6.3%),

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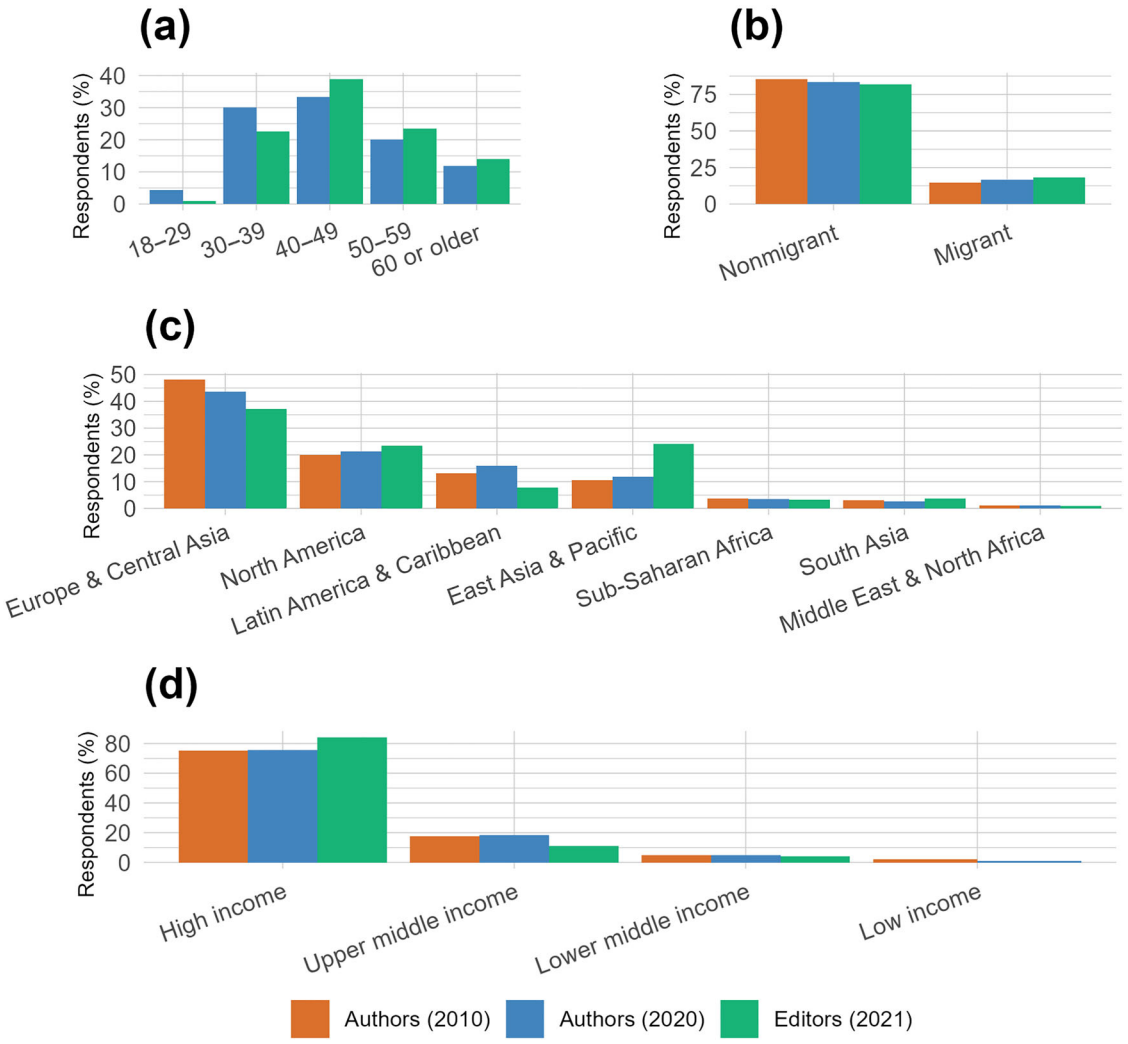


FIGURE 2 Distribution of author (2010 = 745, 2020 = 1348) and editor (n = 221) dimensions of identity observed across conservation-related journals across years: (a) age, (b) whether the person has emigrated, (c) residence by region, and (d) residence by World Bank Income group.

and Brazil (4.9%). Ten countries represented 70.9% of all author institutions. The same 10 countries represented 65.0% of authors' residence locations in 2020. Authors based in China were likely underrepresented in our response data, as they only represented 2% of responses. There were authors at institutions in 37 countries (n = 97; <1%), but in the survey responses, no authors reported being resident in these countries. All but two of these countries had five or fewer authors per country, excluding Egypt (10) and French Polynesia (7). This comparison suggested that the survey response data were unlikely to have been affected by substantial survey response bias for most countries.

Publications in 2010 had a median Rao's Q value of 0.685 (±0.006) compared with 0.698 (±0.004) in 2020, suggesting author diversity significantly increased over time (Δ = 0.013) when considering 12 traits.

The journals with higher-than-average diversity in 2020 included *Biodiversity and Conservation* (Rao's Q = 0.704), *Aquatic Conservation: Marine and Freshwater Ecosystems* (0.694), *Conservation Biology* (0.693), and *Diversity and Distributions* (0.690) (Figure 6; Appendix S5). Six journals demonstrated significant increases in author diversity between publication years: *Biodiversity and Conservation* (Δ = 0.016), *Conservation Physiology* (Δ = 0.129), *Environmental Conservation* (Δ = 0.032), *Journal for Nature Conservation* (Δ = 0.026), *Nature Conservation* (Δ = 0.114), and *Wildlife Society Bulletin* (Δ = 0.065). In 2020, three journals exhibited below-average diversity (upper-confidence limit less than 0.685): *Landscape Ecology* (0.654), *Ecological Engineering* (0.621), and *Human-Wildlife Interactions* (0.642). The first two of these journals showed no significant difference between 2010 and 2020. Overall, 10 of the 16 journals assessed showed no significant changes between years (insufficient data for 2010 *Human-Wildlife Interactions*).

Conservation journal editors

The online survey was sent to 816 conservation journal editors and had a 29.5% response rate (total number of responses = 241). Sixteen editors reported they were not act-

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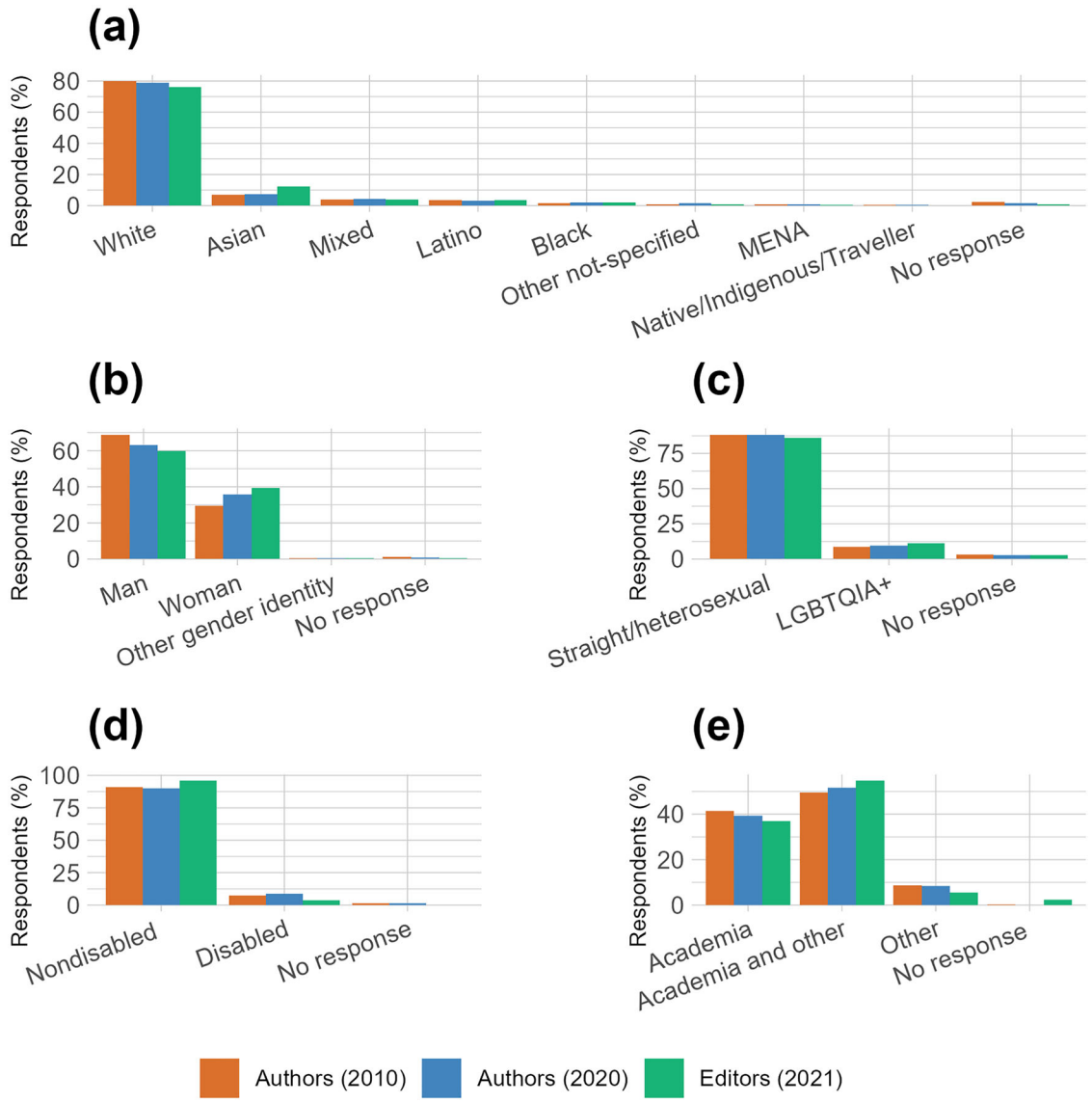


FIGURE 3 Distribution of author (2010 = 745, 2020 = 1348) and editor (n = 221) dimensions of identity observed across conservation-related journals across years: (a) racial identity, (b) gender identity, (c) sexual orientation, (d) whether an author considers themselves to have a disability or impairment, and (e) what sector they work in.

ing as editors for any of the target journals in 2021, and four did not specify for which journal they edited. Therefore, the final sample size for editor responses was 221.

Most editors resided in Europe and Central Asia (37.1%), followed by East Asia and the Pacific (24.0%) and North America (23.5%). Only two editors resided in the Middle East and North Africa (Figure 1). More specifically, most editors lived in the United States (18.6%), Australia (12.2%), and the United Kingdom (11.3%). Over four-fifths of editors (84.2%) resided in high-income countries, whereas only 4.6% resided in lower-middle- or low-income countries. Most editors reported being from the United States (23.0%), Australia (13.4%), and the United Kingdom (13.0%). Seventeen percent of editors were dual nationals, and 81.9% of editors resided in a country where they were citizens. Of the respondents, 67% were nationals from high-income, 10.9% from upper-middle-income, 5.9% from lower-middle-income, and <1% from low-income countries. Additionally, 76% of editors self-identified as White and 12.2% as Asian (Figure 3). Only 2.3% of editors self-identified as Black or MENA, and no editors self-identified as being part of Native, Indigenous, or Traveler communities. The most common age category was 40–49 (38.9%) (Figure 2) (for a synopsis of editor information, see Appendix S6).

Most editors self-identified as men (59.7%), 39.4% as women, and only one as another gender identity. Almost all editors self-identified as cisgender, but two chose not to respond to this question. Most editors self-identified as straight or heterosexual (86.0%), and 11.3% self-identified as LGB[T]QIA+. Six editors chose not to respond to this question. In addition, 3.6% of editors reported a disability.

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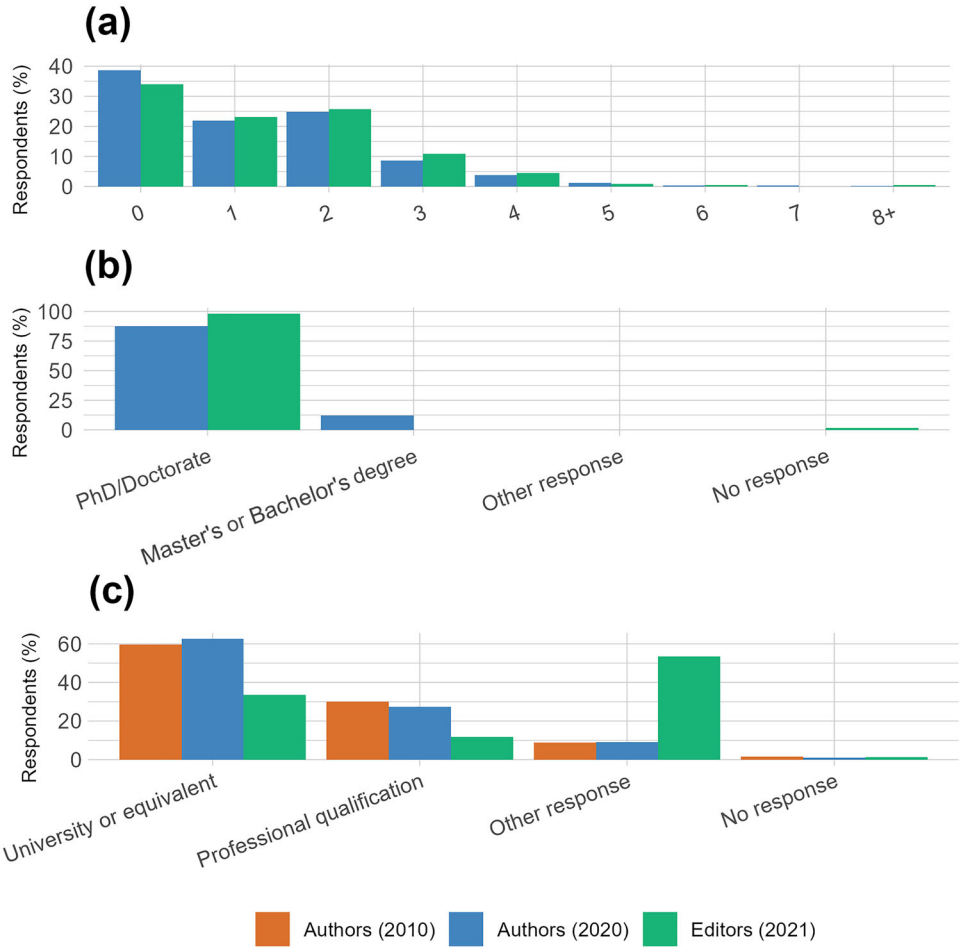


FIGURE 4 Distribution of author (2010 = 745, 2020 = 1348) and editor (n = 221) dimensions of identity observed across conservation-related journals across years: (a) the number of dependents, (b) the education of the author/editor, and (c) the education of the author's/editor's parent or caregiver.

Editors had a mean number of 1.4 dependents (0–10), and 33.9% had no dependents. All editors who responded to the question selected PhD or Doctorate as their highest level of education (n = 217 out of 221; Figure 4). Fewer editors than authors reported that their parents or caregivers were educated to a bachelor's degree level or equivalent (33.5% compared with 61.5%), and 53.4% chose other to describe their education.

Of the editors, 36% self-identified as atheist and 24% as agnostic (Figure 5). The most common religious affiliation was Christianity at 14.5%. The question of religion had the lowest response rate, with 9% abstaining from answering. Almost three-quarters of editors selected center-left to far-left as their political orientation, predominantly left and center-left. No editors selected right or far-right. Fourteen (6.3%) did not respond to this question. Additionally, 92% of editors worked in academia or an educational institution, but the majority (54.8%) also reported working for another sector.

Of the responding editors, 68% self-identified as White from high-income countries. The largest editor demographic included men (32.6%) and women (22.6%) who identified as White, cisgender, heterosexual, without a disability, educated to PhD or higher, and a resident in high-income countries (55.2%). In comparison, women from lower-middle-income or low-income countries represented 2.3% of editors, and there were no men or women from middle-income or low-income countries with a disability.

Conservation Science and Practice had greater than average diversity across their editorial board (median Rao's Q value >0.651), whereas *Landscape Ecology* and *Diversity and Distributions* both had lower than average diversity. Six journals did not significantly differ (Appendix S7), and nine journals had sample sizes of <10 editor respondents (Appendix S1).

DISCUSSION

Overall, we found an increase—albeit modest—in the representation of some author dimensions in the conservation literature. However, despite ongoing calls for broader inclusivity, there has been very little change in the last decade beyond gender. Although gender representation has slightly improved, other

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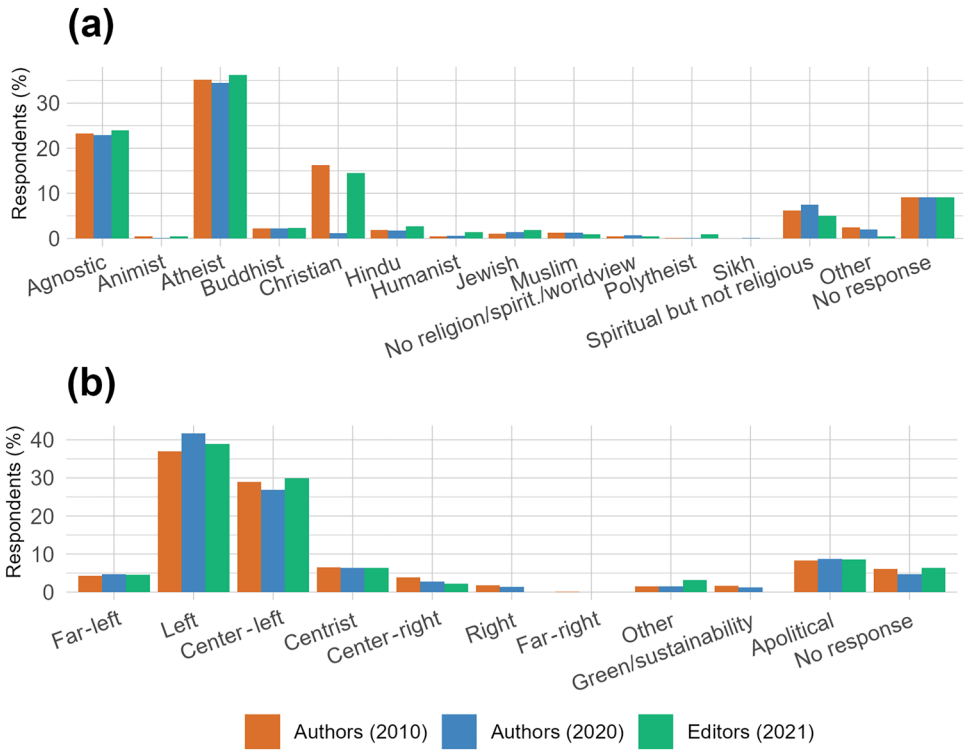


FIGURE 5 Distribution of author (2010 = 745, 2020 = 1348) and editor (n = 221) dimensions of identity observed across conservation-related journals across years: (a) religious identity and (b) political orientation.

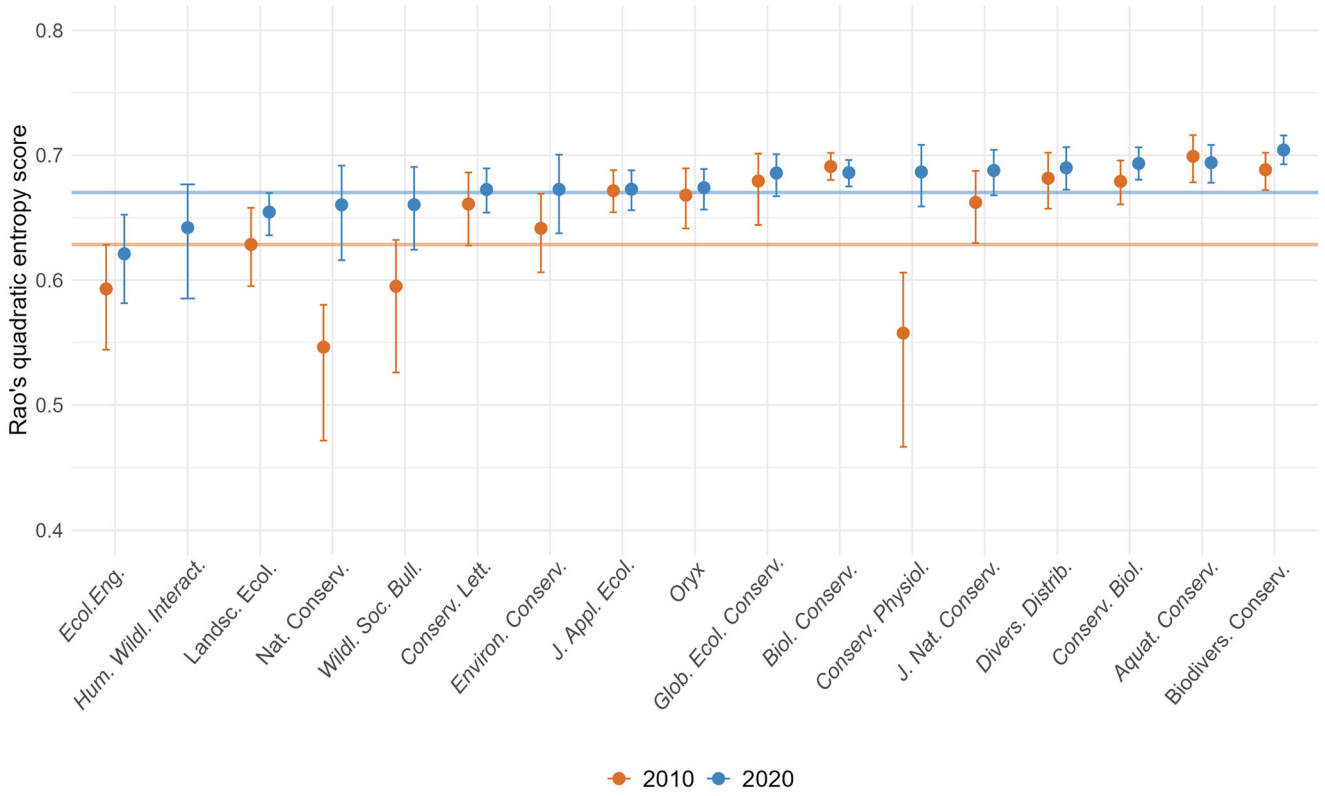


FIGURE 6 Diversity of author identities (measured by Rao's Q for 12 dimensions) across conservation-related journals in two publication years. Points represent median scores with 95% confidence intervals. Horizontal lines represent the average across all journals per year. Journals with <10 author respondents per year have been removed (see Appendix S1 for more information on journal sample sizes per year).

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aspects of diversity have shown no comparable change. We found very little change in the racial identities of authors over the last decade and in the proportion of authors from the Middle East, Africa, or South Asia. People who identify as White from high-income countries still represented over 65% of all authors and editors in publishing in 2020. For context, the population in high-income countries for all racial groups represents 17.4% of the global population (World Bank, 2023). Although our results suggest a small step toward inclusion, clearly, more is needed to accelerate the rate of change.

Regional and racial inequities

Several studies demonstrate the racial inequities and underrepresentation of people from the Global South in ecology, evolution, and conservation publishing (Maas et al., 2021; Nuñez et al., 2019; Rushworth et al., 2021; Wanelik et al., 2020). Hughes et al. (2023) found that over half of the "top researchers in ecology and evolution" for 2022 were from three countries (the United States, the United Kingdom, and Australia), and 97% were Caucasian. In comparison, American, British, and Australian nationals represented 34% of all authors in our study and approximately 49% of editors (5.4% of the global population; World Bank, 2023); over 75% of authors and editors identified as White. We observed an increase in certain regional demographics between 2010 and 2020. For example, there were more authors from Latin America (largely Brazil) but not from the Middle East, South Asia, or Africa. Alarmingly, only 2.9% of authors and 2.3% of editors in 2020 self-identified as Black, MENA, or part of Native, Indigenous, or Traveler communities. From lower-middle- and low-income countries, these racial identities accounted for only 1.1% of authors in 2020 and <1% of editors. Although race and geography often intersect, they can present distinct barriers to equity and inclusion. As race is a social construction defined differently across countries, it is not possible to produce reliable global estimates of each racial identity (Balestra & Fleischer, 2018). Nevertheless, it can be reasonably inferred that individuals identifying as White comprise a minority of the world's population and were overrepresented in our study if considering global demographic distributions.

Barriers to publishing exist across the research timeline, from access to education, employment, collaborations, funding, and resources, among others. However, implicit bias in the review process can also exclude minority groups. Between 2015 and 2017, 24% of papers submitted to the *Journal of Applied Ecology* from Europe were accepted versus only 8% from East Asia (Nuñez et al., 2019). After identifying this bias, the British Ecological Society (BES) transitioned all its journals (including the *Journal of Applied Ecology*) to double-blind peer review (BES Press Office, 2023). Similarly, journal policies such as shifting the publication model can impact who can publish. For example, *Oryx* transitioned to a fully open-access (OA) model in 2021. Future research could evaluate the impact this transition has had on author demographics.

Changes in publishing patterns between genders

Over the last decade, there have been efforts to improve the representation of women in science, including in ecology, evolution, and conservation. Society-led initiatives, such as the Society for Conservation Biology's (SCB) Equity, Inclusion, and Diversity Committee and the BES Equity and Diversity for all Genders in Ecology (EDGE) network, promote gender equity through mentorship, advocacy, and greater visibility. Our results suggested positive change toward more gender equality in publishing. However, men still represent 60% of authors and editors in conservation journals, and improvements were not universal across different regions. There was little change for women outside of high-income countries, demonstrating how overlapping forms of marginalization can compound existing disparities. We observed greater gender equality for authors without dependents in 2020 (n = 523; 55.5% men and 43.8% women) compared with a much larger disparity for those with dependents (n = 827; 68.8% of men vs. 30.6% of women). The gender gap observed among authors with dependents may reflect wider societal expectations of caregiving responsibilities between genders, which can limit women's sustained participation in academic publishing (Cairo et al., 2026; Jemielniak et al., 2023; Lee et al., 2023; Park et al., 2025). Women face cumulative disadvantages in research productivity and career progression, and these disparities reflect broader structural patterns that contribute to the leaky pipeline in academia.

Although we observed higher women's authorship, our study did not account for differences in author position (i.e., location within the author list). An author's position can be an important indicator of an author's contributions to a paper and, consequently, the credit an author receives. Other studies suggest that the representation of women decreases at higher career stages (Rushworth et al., 2021) and women are less likely to represent the first or last author (the most significant contributor and the senior researcher, respectively), particularly women from the Global South (Grosso et al., 2021; James et al., 2022; Nuwer & Nienaber, 2026). In Latin America, Salerno et al. (2019) found that gender representation in authorship is strongly correlated with the gender of the last author, with far fewer women coauthors when the last author was a man. Achieving more balanced authorship will require not only greater representation of women in leadership positions and editorial roles but also changes in collaboration practices that currently perpetuate gender imbalances.

Other dimensions of diversity

There is a growing awareness of the barriers researchers with disabilities face, especially in STEM and field-based disciplines such as ecology (Bhaumik & Paparella, 2025; Joice & Tetlow, 2021; Middleton & Branch, 2025). Disability encompasses a broad range of physical, cognitive, and mental differences that affect a person's ability to perform certain activities or to do

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so within certain environments. In 2021, there was a distinct difference in the percentage of research postgraduates with a known disability (14% in the United Kingdom) compared with academic staff (6%) (HESA, 2023, 2025). Inaccessible social and environmental infrastructure can create barriers that limit equal participation for researchers and students across the ability spectrum (James et al., 2019). As such, academic staff with a known disability are disproportionately more likely to have teaching-only contracts compared with their peers without a known disability (Joice & Tetlow, 2021), which may partly explain the low representation of authors with a disability. However, journals can do more to support authors. For example, the academic publisher Sage now offers 1:1 support for neurodivergent authors through the peer-review process (Lowenstein, 2021). Implementing inclusive accommodations not only supports disabled individuals but also can improve accessibility and working conditions for everyone (Chandola & Rouxel, 2021). Similarly, initiatives to support LGBTQIA+ researchers, such as offering researchers the option to update their name on previous publications (Gaskins & McClain, 2021), can benefit anyone wishing to update their information (e.g., after marriage/divorce).

Pressures to publish

Whether someone publishes and at what age/career stage are influenced by many factors, including peer networks/mentorship, institutional support, career progression, economic motivations, and generating new research in which to publish (Savage & Olejniczak, 2021). However, the publish-or-perish culture of science represents the greatest pressure for early-career researchers as research output becomes increasingly important in academic hiring decisions, especially for those who are already marginalized (Hamann, 2019; Husemann et al., 2017). In 2020, 23% of authors younger than 40 (110 of 466) were educated up to master's or bachelor's degree level compared with 7% of authors 40 and older (58 of 882), suggesting there may be increased pressure for students to publish (Yeung, 2019). However, as we did not ask respondents to provide their age at the time of publishing and as we were not able to determine it based on career stage, more research is needed to assess whether our findings represent a positive trend toward more publishing opportunities for junior researchers or a concerning trend of junior researchers facing pressure to publish.

Underrepresentation's relevance to conservation research

Conservation, and science more broadly, is shaped by the perspectives and priorities of those who implement and oversee it. Although our study did not evaluate the consequences of underrepresentation for conservation outcomes, previous research suggests that inequalities in scientific publishing can influence the evidence base available for conservation science and policy. Many priority areas for conservation research are focused in the Global South, where biodiversity is concentrated, but 40% of conservation studies are conducted in the United States, the United Kingdom, and Australia compared with only 10% in Africa and 6% in Southeast Asia, leaving some biodiversity-rich regions comparatively understudied (Di Marco et al., 2017). We found that these three countries still dominate conservation publishing, which will ultimately impact research focus. Nevertheless, Amano et al. (2016) estimated that 35.6% of biodiversity conservation publications are published in languages other than English and argued that excluding non-English literature from global evidence syntheses can create information gaps and bias our understanding. In addition, international collaborations can result in ghost authors, where foreign researchers do not acknowledge local researchers' contributions as coauthors, ultimately jeopardizing their career opportunities (Rayadin & Buřivalová, 2022). Without mutually beneficial research collaboration across countries, conservation science conducted in the Global South by Global North researchers is prone to parachute science (Rayadin & Buřivalová, 2022), which could result in unacceptable power imbalances that hinder locally driven, solution-focused, and sustainable conservation action (de Vos & Schwartz, 2022). Similarly, the current publishing landscape fails to account for perspectives from Indigenous peoples and adequately acknowledge the barriers faced by these communities within the peer-review process (Corrigan et al., 2018; Loseto et al., 2020). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Global Assessment (IPBES, 2019) highlighted the importance of Indigenous peoples and local communities for biodiversity conservation and ecosystem management, while emphasizing the need for greater inclusion of Indigenous and local knowledge in biodiversity assessments. It has been suggested that underrepresentation in scientific publishing may affect which regions, languages, knowledge systems, and perspectives are incorporated into the scientific evidence used to inform conservation research, assessments, and policy decisions. However, the direct effects of these processes on conservation outcomes were not examined in the present study.

Previous research has demonstrated that individuals who are not personally affected by discrimination often underestimate racism, sexism, and other biases (Carter & Murphy, 2015; Kirkman & Oswald, 2020). We saw evidence of this as several respondents challenged the motivation of our study. Several focused broadly on why we were interested in author dimensions (e.g., "I do not agree, that it would have to do with conservation research at all!!!"), whereas others challenged the rationale behind specific dimensions (e.g., "What has this to do with the survey? Do you need to know my favorite position as well?" [Question 9 on sexual orientation], "I do not have a gender identity. I do not recognize the legitimacy of this question" [Question 7 on gender identity], "I never have to describe my race in my day to day life or at my work"). People who argue against EDI-focused initiatives may argue that inclusion is implicit, and therefore, there is no need to consider people's identity explicitly (Freeman, 2018). However, survey data provide quantitative evidence of inequalities that may otherwise be

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dismissed. Self-reported demographic surveys provide detailed information for those who participate. However, four out of five authors and two out of three editors did not respond to the survey. Certain groups of people are more or less likely to respond to different survey types, depending on age, gender, and other factors, potentially biasing response data (Leone et al., 2022). There is also a bias in the lifespan of email addresses for corresponding authors. Institutional email addresses expire when researchers move between institutions, more often earlier in their careers, and older email addresses are more likely to have expired than those on recent papers (Wren et al., 2006). Similarly, retention of staff can differ between demographics. These factors can be confounding; for example, women may be more or less likely than men to participate in self-administered surveys, depending on the survey type, and have lower job retention rates in academic positions (Cairo et al., 2026; Kwak & Radler, 2002; Spoon et al., 2023). More work is needed to evaluate nonresponse bias and whether it leads to under- or overestimating the representation of certain groups. We note this study focused on authors publishing in international, English-language journals, and the survey was provided in English using Anglosphere terminology to describe dimensions of identity. We recognize that there are differences in how people relate to language, as well as in the relative sensitivity of certain topics, thereby impacting how a person responds to sociodemographic questions (Goerman et al., 2025). Therefore, the survey may have had fewer responses from potential respondents who were less familiar with English and Anglosphere terminology and research from the Global South that is underrepresented in the journals assessed or whose identity could have placed them at risk.

Improving EDI in conservation publishing

Although progress in gender representation is encouraging, the persistence of racial, geographic, and intersectional inequities indicates that deeper structural reform is required to promote greater EDI in conservation publishing. Addressing continuing disparities demands coordinated action across editorial practice, financial models, and institutional accountability.

First, journals should articulate clear and measurable EDI commitments and report regularly on progress toward these commitments (Mahdjoub et al., 2022). Our findings demonstrated the value of self-reported demographic data in identifying patterns that might otherwise remain obscured, a fact already recognized by large publishers such as Elsevier, which has introduced the opportunity for reviewers and authors to self-report their gender identity, ethnic origins, and race (Hill-Parks, 2025). Without measurement, it is not possible to assess whether disparities arise from differential submission patterns, editorial decisions, or structural barriers embedded in the review process (Dewidar et al., 2022). Routine, anonymized publication of author and editorial demographics, including submission and acceptance rates by region, would allow journals to move from anecdotal concern to systematic evaluation. Simultaneously, standardized reporting frameworks across conservation journals would enable benchmarking over time and across outlets.

Second, editorial processes warrant careful scrutiny. The low response rate from editors may reflect a lack of interest in the topic. However, editors act as gatekeepers, and our results showed that editorial boards remain demographically homogeneous. Journals should therefore adopt proactive strategies to diversify editorial boards, including open calls for nominations, transparent selection criteria, fixed term limits, and mentorship pathways for early-career researchers from underrepresented regions (Avery et al., 2022; Dewidar et al., 2022), and provide EDI training to their editorial staff. Associate editor mentoring schemes, such as those implemented by the BES (Journal of Ecology, 2024), provide one mechanism to expand editorial capacity while broadening representation. Peer review practices also merit attention. Universal adoption of double-blind review, rather than optional models, may help reduce the influence of institutional prestige, nationality, and name recognition during early-stage evaluation. Although double-blind review does not fully eliminate bias, evidence suggests it can mitigate some forms of prestige-based discrimination (Tomkins et al., 2017) and is already largely preferred by authors (Yoh et al., 2025). Automated manuscript screening tools can assist in removing identifying metadata prior to review and flagging unprofessional reviewer language, thereby supporting editors in maintaining equitable standards without increasing workload. However, these technological supports should be embedded within clear editorial guidelines that prioritize fairness and accountability.

Third, reducing skill-based barriers requires shifting responsibility from individual authors to journal infrastructure (Amano et al., 2023). Language proficiency and adherence to Western academic conventions can influence review outcomes, yet directing authors to external, paid editing services reinforces inequities, which may explain why those options are often regarded by authors as worse than offering no support at all (Yoh et al., 2025). Journals could instead provide integrated, universally available writing and formatting support at the submission stage. AI-assisted language and structural feedback tools, when offered equitably to all authors, may improve clarity and reduce preventable desk rejections without stigmatizing particular groups. Such systems should be framed as accessibility infrastructure rather than targeted remediation. In doing so, journals acknowledge that the ability to navigate publishing conventions is shaped by unequal educational and institutional opportunities.

Although the transition to OA publishing democratizes access to research findings, article processing charges now represent a financial barrier to equitable participation for authors (Williams et al., 2023). The dominance of authors from high-income countries in our study underscores how publication costs may compound existing disparities. Conservation societies are particularly well positioned to pilot alternative models, including Subscribe to Open, where a journal becomes OA after reaching a set number of subscribers, and diamond OA, in which neither authors nor readers pay publication fees. Although concerns regarding sustainability are legitimate, society-led journals in other disciplines have demonstrated

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that such models can operate when supported by institutional consortia, cross-subsidization within journal portfolios, or charitable funding. A phased approach, beginning with one flagship diamond OA journal per major conservation society, could test feasibility while signaling commitment to equitable participation. Technological efficiencies in production workflows may reduce operational costs, but governance reform and institutional will are likely to determine whether such transitions are realized.

Finally, representation should be treated as a dimension of journal performance rather than solely an aspirational value. Just as journals track citation metrics and turnaround times, they should incorporate EDI indicators into annual reporting and strategic planning. Accountability ultimately rests with leadership structures, namely, journal publishers who profit the most from the current prevailing academic publishing model. If the field is to address biodiversity loss effectively and ethically, then it must ensure that those most closely connected to conservation challenges are equitably represented in shaping research agendas and disseminating knowledge. Structural reform of publishing practice represents a necessary step toward that goal.

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