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Little transparency and equity in scientific awards for early- and mid-career researchers in ecology and evolution

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Scientific awards can shape scientific careers, helping to secure jobs and grants, but can also contribute to the lack of diversity at senior levels and in the elite networks of scientists. To assess the status quo and historical trends, we evaluated 'best researcher' awards and 'best paper' early- and mid-career awards from broad-scope international journals and societies in ecology and evolution. Specifically, we collated information on eligibility rules, assessment criteria and potential gender bias. Our results reveal that, overall, few awards foster equitable access and assessment. Although many awards now explicitly allow extensions of the eligibility period for substantial career interruptions, there is a general lack of transparency in terms of assessment and consideration of other differences in access to opportunities and resources among junior researchers. Strikingly, open science practices were mentioned and valued in only one award. By highlighting instances of desirable award characteristics, we hope this work will nudge award committees to shift from simple but non-equitable award policies and practices towards strategies enhancing inclusivity and diversity. Such a shift would benefit not only those at the early- and mid-career stages but the whole research community. It is also an untapped opportunity to reward open science practices, promoting transparent and robust science.

Academic careers are built on recognition. Research awards and prizes are both the pinnacles and accelerators for academic careers. As awards raise profiles and confer credibility to individual researchers, they can be powerful drivers enabling access to resources, such as jobs, funding and collaborations[1]. In the world of limited resources, major scientific awards not only propel individual careers but also reinforce existing biases[2].

Globally, major prizes are awarded to a relatively small and interconnected group of people, who often receive multiple awards[3]. This group is not representative of the broader population of

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researchers. Much has been written on how top scientific trophies, like the Nobel Prize, are biased towards men[4] and white people[5] from developed countries and well-funded institutions in the global North[6]. Although recent studies across disciplines reported some progress towards gender parity across senior-level awards, analyses also reveal that the progress has been generally slow[7–9].

There are many potential reasons for the unsatisfactory progress towards reducing the gender and other biases in senior-level awards, one being the lack of suitable candidates. Low proportions of women and other historically under-represented groups, in senior and leadership positions in academia, stem from many structural inequalities and disparities in academic recognition and career progression[10]. The cumulative nature of academic recognition, where differences accumulate over time, has been termed 'the Matthew effect', which originated from a verse in the New Testament (Matthew 25:29)[2]. Thus, early biases can have large downstream effect and ultimately contribute to driving minorities out of academia or relegating them to less prestigious roles and slower career tracks[11,12].

This raises a new question: are early- and mid-career academic awards awarded equitably? These awards provide initial recognition by the scientific community, increase research visibility and impact, build confidence and sense of belonging and expand collaborative and social networks. As such, they could potentially open or reinforce access to the 'elite circle' senior roles and the associated benefits and may allow the recipients to stay on an a fast-track academic career path[3]. If odds are stacked against minorities from early on, the biases in these awards could magnify inequalities[1].

There are several ways in which early- and mid-career research awards may lack equity and contribute to the low diversity and biased representation in the upper echelons of science. These potential factors can be roughly divided into those relating to access or assessment.

The access can be unequitable if eligibility cut-offs (usually expressed in years since PhD) do not consider special circumstance that affect academic career progression, such as career breaks, part-time work, chronic ill health issues, disability, natural disasters, political turmoil or war. Researchers with non-traditional research profiles or personal characteristics may lack confidence to self-nominate[13], particularly if the past winners are not diverse, implying bias against minorities. Minority candidates may also be less likely to be nominated for awards by others, as the research contributions of under-represented groups are more likely to go under-recognized[14,15]. This can transpire especially in the phrasing of the nomination or support letters[16–19].

Lack of transparency related to the assessment may breed distrust in the equitability of how prizes are awarded. Undisclosed identity of the assessors and lack of details of the selection process and selection criteria, could all contribute to the concerns that the decisions might be affected by many of the implicit biases rampant in academia and in the broader community (for example, ref. 20). Bold and broad statements about 'outstanding contributions' and 'scientific excellence' in award descriptions may have no meaning or even negative implications, distracting from the robustness, transparency, replication and impacts outside academia[21]. Robustness, transparency and replication are among the core principles of open science and are potentially beneficial for early-career researchers, improving participation and diversity in research[22].

Traditional assessment criteria also ignore the circumstances in which research was performed and the large differences between individuals in access to research opportunities. If consideration is given to the availability of funds, mentoring, infrastructure, materials, safety and personal circumstances, the outcomes of the award process could become more equitable[23]. Finally, lack of feedback for unsuccessful applications could hinder those who may not have access to high-quality mentoring and support, further reducing their likelihood of success in future applications.

Our work addressed three objectives: (1) to describe the status quo in terms of eligibility and assessment criteria of international individual research and publication recognition awards relevant to a broad range of early- and mid-career researchers in ecology and evolutionary biology, (2) to assess progress in achieving gender equity among the award winners and (3) to communicate the need for improving awards policies and how this can be done—ultimately making individual awards more equitable and inclusive.

Results

From ten eligible awarding societies and nine journals, we collected data on 13 'best researcher' awards and ten 'best paper' awards. Figure 1 presents the overview of the awards in terms of their disciplinary focus, geographical range, EDI (equity, diversity and inclusion) policies or structures of the awarding body and the target career stage of the potential awardees. Detailed breakdowns of these data by award can be found in Supplementary Tables 7 and 8. Supplementary Figs. 2 and 3 present the distributions of the ranges of years for which awardee information is available for the included best researcher and best paper awards, respectively. Overall, the awards are evenly distributed between ecology and evolution, with some differences between the two award types when it comes to presumed geographical distribution (some best researcher were linked to regional societies but all journals were global) and societies being more likely to have EDI-related policies and structures. The target audience of the best paper awards is almost exclusively limited to students and early-career researchers within a few years of their degree. We present our main findings regarding other award characteristics separately for each award type.

Best researcher awards

Out of 13 awards in this category, eight allowed candidates to extend the period of eligibility (usually defined as number of years since PhD) in case of substantial career interruptions (Table 1). Only four allowed candidates to self-nominate, two did not require nomination or recommendation letters, which usually are part of the process of nominating a candidate for an award. Only two award descriptions explicitly encouraged historically under-represented groups to apply. However, they did not specify which groups (other than women) they consider as minorities or historically under-represented.

When it comes to transparency, for six of the awards we were able to find information on who will be assessing the applications but none of the awards provided summary data on the characteristics of the past applicants (assessment process transparency in Table 1). Similarly, for only three awards, assessment criteria extended beyond one sentence of vague generalizations. Thus, most awards are given for 'significant contributions', 'excellent research', 'outstanding research', 'important scientific breakthrough', 'meritorious contributions' or 'creative approaches'.

Five award descriptions noted that contributions outside pure research activities will be also considered, such as reviewing, mentoring, outreach and teaching. Here are a few examples:

- 'The ideal candidate will be one whose career embodies the values of the society, for example in mentoring, outreach, and teaching.' (SMBE Early-Career Excellence Award and SMBE Mid-Career Excellence Award)
- 'Individuals whose research and writing illuminate principles of evolutionary biology and an enhanced aesthetic appreciation of natural history will merit special consideration.' (ASN Distinguished Naturalist Award)
- 'For their excellent biological research, and contribution to the wider natural history community, for example, editorial and/or committee/policy work/public engagement).' (LSL The Bicentenary Medal)

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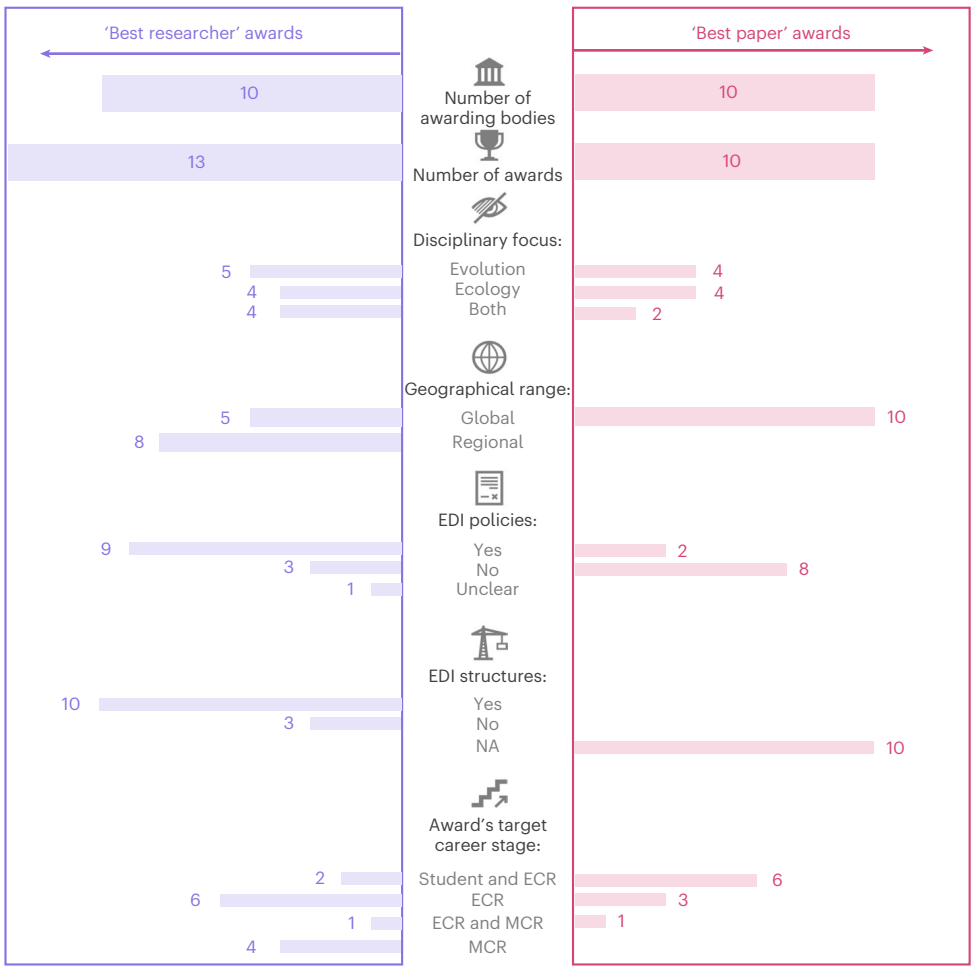

Fig. 1 | Main characteristics of the included best researcher and best paper awards for early- and mid-career researchers in ecology and evolution. EDI, equity, diversity and inclusion; NA, not assessed (we did not expect journals to have dedicated organizational structures for supporting EDI); ECR, early-career researchers; MCR, mid-career researchers.

There was only one case where commitment to open science practices was recognized. This was a new award established in 2021 by the Society for Open Reliable Transparent Ecology and Evolutionary biology (SORTEE). The purpose of this Open Science in Practice Award is solely to recognize and promote such practices: 'This award aims to recognize and reward researchers who have endeavoured to implement best practices in open science (OS) within their research workflow, thereby increasing the transparency and reproducibility of their research activities'.

At the same time, for only two awards we found statements suggesting that applications will be considered in relation to the available opportunity and barriers that the candidates faced. For example, 'The IRPE Prize (International Recognition of Professional Excellence) honours a young ecologist … and/or who must work under particularly difficult conditions' or (from application documents for SORTEE Open Science in Practice Award) '…limited by financial constraints, access to certain resources, bureaucratic restrictions, or any other barrier'. Finally, none of the award descriptions mentioned that any feedback on unsuccessful applications can be provided to interested applicants.

In the distribution of awardee's gender across the decades, male bias is clearly noticeable before year 2010 (Fig. 2; see Supplementary Fig. 2 for the range of years of data for each award and Supplementary Fig. 3 for gender bias data as raw counts per decade) (31% female names; estimate = −0.779, s.e. = 0.124, $Z = -6.28$, $P < 0.001$, $n = 52$). Over the decades the gender bias tends to be reduced or, in some cases, even reversed (SMBE Early-Career Excellence Award).

Researchers affiliated with institutions located in the United States usually received most of the prizes (67% across all awards in this category), followed by the researchers affiliated with institutions in Canada, the United Kingdom, France, Australia, Switzerland and Germany. Only 5% of the awards went to other countries (Supplementary Fig. 6). The top ten most common applicants first names were traditional Western names, with only one name among these being female (Supplementary Fig. 8).

Best paper awards

Out of ten awards in this category, only four allowed to extend the period of eligibility in special circumstances (Table 2). In three of these cases, award eligibility was only conditional on the published research being based on a graduate student work. Inflexible eligibility was usually based on a fixed number of years after the PhD when the paper had to be published or the biological age of the applicant (under 40 for the George Mercer Award from the Ecological Society of America).

Young researchers could nominate themselves for eight out of ten awards, usually by ticking a box on the manuscript submission form. As such, in most cases, there was no need to submit any additional documentation. Still, nomination or recommendation letters were required for four of the awards. We did not find any expressions of

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Table 1 | Assessments of the included best researcher awards for their equity, transparency and recognition of open science practices

Award name	Flexible eligibility allowed	Self-nomination allowed	No nomination letter	Inclusivity statement present	Assessor transparency	Process transparency ensured	Criteria transparency ensured	Diverse contributions valued	Open science practice valued	Relative opportunity noted	Feedback available
SORTEE Open Science in Practice	No	Yes	Yes	No	No	?	Yes	No	Yes	Yes	No
ESEB Maynard Smith Prize	Yes	Yes	No	No	Yes	No	No	No	No	No	No
ESEB President's Award	?	No	Yes	No	Yes	No	No	No	No	No	No
SSE Dobzhansky Prize	Yes	Yes	No	Yes	Yes	No	No	No	No	No	No
ASN Distinguished Naturalist Award	Yes	No	No	No	Yes	No	No	Yes	No	No	No
ASN Early-Career Investigator Award	Yes	Yes	No	No	Yes	No	No	No	No	No	No
ESGAS GfÖ-Prize	No	No	No	No	No	No	No	No	No	No	No
SMBE Early-Career Excellence Award	Yes	No	No	No	No	No	Yes	Yes	No	No	No
SMBE Mid-Career Excellence Award	Yes	No	No	No	No	No	Yes	Yes	No	No	No
LSL Bicentenary Medal	No	No	No	No	No	No	No	Yes	No	No	No
IEI Professional Excellence	No	No	No	?	?	No	No	No	No	Yes	No
ESA MacArthur Award	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No
BES Founders Prize	Yes	No	No	No	No	No	No	No	No	No	No

Detailed descriptions of extracted data are available in Supplementary Table 3. We considered 'yes' answers as potentially beneficial for EDI. Unclear answers are represented as '?'. Award names are preceded by the abbreviated name of a granting organization. SORTEE, Society for Open Reliable Transparent Ecology and Evolutionary biology; ESEB, European Society for Evolutionary Biology; SSE, Society for the Study of Evolution; ASN, American Society of Naturalists; ESGAS, Ecological Society of Germany, Austria and Switzerland (Gesellschaft für Ökologie, GfÖ); SMBE, Society for Molecular Biology and Evolution; LSL, Linnean Society of London; IEI, International Ecology Institute; ESA, Ecological Society of America; BES, British Ecological Society.

encouragement for members of historically under-represented groups to nominate themselves for the awards.

The assessment of the eligible manuscripts is usually conducted by the journal editors and, given that the latter are listed on the journal websites, we recorded this as sufficient information for six journals. For all awards, we found no publicly available summary data on the characteristics of the past applicants (process transparency in Table 2) or assessment criteria beyond vague terms of novelty, importance, outstanding research and simply being the 'best paper', which perfectly matched our predefined name of the award category. None of the descriptions noted the importance of following open science principles or offered to provide feedback to unsuccessful applicants.

Historical gender bias is clear in the early years of the only award in this category that has been running for more than 15 years—the George Mercer Award from the Ecological Society of America (four decades of data, any journal; Fig. 3; see Supplementary Fig. 4 for the range of years of data for each award and Supplementary Fig. 5 for gender bias data as raw counts per decade; 45% female names; estimate = −0.214, s.e. = 0.228, $Z = -0.94$, $P = 0.35$, $n = 40$). In the last decade, the gender gap has narrowed for the George Mercer Award, matching a general pattern in the remaining, more recent, journal awards (Supplementary Fig. 5).

Similarly to what we observed for best researcher awards, here researchers affiliated with institutions in the United States usually received most of the prizes (64%), followed by the researchers affiliated with institutions in Canada, the United Kingdom, France, Australia, Switzerland and Germany; 10% of the awards went to other countries (Supplementary Fig. 7). The top ten most common applicants first names were exclusively traditional Western names: nine male and one female (Supplementary Fig. 9).

Discussion

Our survey of early- and mid-career awards in ecology and evolution returned disappointing results on the equity in access and assessment. Although most of the assessed awards provided some flexibility in terms of the eligibility timing, few encouraged researchers from under-represented minorities to apply, judged research outcomes relative to opportunity or considered diverse types of research contributions. Assessment criteria were generally obscure and did not mention research transparency, replicability or robustness. Despite this, we observed a trend towards decreasing gender gap in the cohorts of past winners across the decades. Below, we discuss our findings in the context of the literature, acknowledge limitations and future directions for research and suggest recommendations for how to make early- and mid-career recognition awards more equitable and transparent.

Awards characteristics

Our survey investigates accessibility and transparency of research awards to reveal how they potentially contribute to the systemic disparities in career progression of early- and mid-career researchers. Our approach stands in contrast to a growing number of studies simply quantifying biases in the lists of past winners, usually in relation to gender. Senior-level awards receive much attention (for example, ref. 24), as do awards specific to a geographic locations (for example, North America[9,25] and English-speaking countries[26]) and/or discipline (for example, see refs. 7,27,28). These studies often report substantial under-representation of females for the most prestigious awards and increasing parity in less prestigious awards, especially for early-career researchers, in line with our findings.

An increasing number of societies proclaim their commitment to increasing EDI[26]. Indeed, most of the international societies in our

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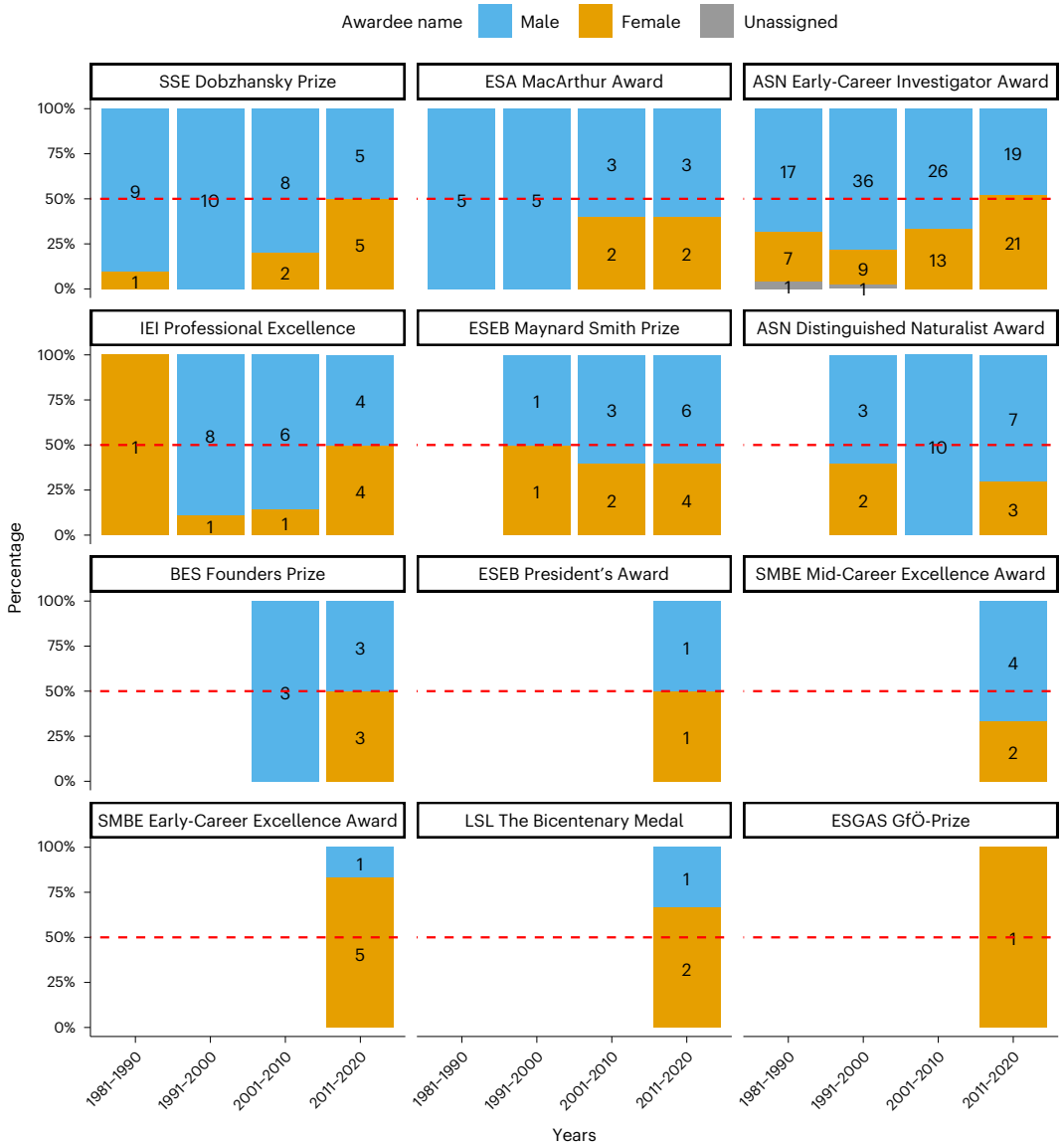

Fig. 2 | Plot of the percentages of the female and male names for included best researcher awards across decades. Award names are preceded by the abbreviated name of a granting organization. Numbers on the bars are counts of awardees.

study had EDI-related policies and structures (Fig. 1). An EDI representative or a committee dedicated to increasing the representation and support of under-represented groups could monitor and advocate for changes towards greater equity in the recognition awards[29]. Although we cannot directly assess whether EDI policies and structures can influence how prizes are awarded, the best researcher awards from the few societies without EDI structures did not score well on the features we considered as potentially positive for the EDI (one or two 'yes' in Table 1).

We made four more unplanned observations. First, there are fewer relevant awards targeting mid-career than those available to early-career researchers: five versus nine in best researcher awards and one versus ten in best paper awards categories, respectively (for a few awards both career stages are eligible; Supplementary Tables 7 and 8). This indicates a gap in research recognition opportunities for mid-career researchers. Second, we noted a lack of gender diversity in award names, as seven out of seven 'named' awards are honouring white male scientists (an additional one was recently renamed to a neutral name; Supplementary Table 2). This is remarkable, given that award naming has been implicated in reinforcing the stereotypes of who the successful scientist is[30] and that female academics are less likely to win awards named after men than awards named after women[31]. Third, we noted that past award winners were predominantly affiliated with institutions located in the United States and a few other Western countries. Fourth, traditional Western first names were most common among the past award winners, which might indicate their Western ancestry.

Limitations and future directions for research

The data collected from our survey of the characteristics of the awards has limitations when it comes to generalizing its results. First, our disciplinary scope was limited to ecology and evolution. Thus, we excluded more general awards and those dedicated to specific biological subdisciplines. Second, we only focused on international awards and excluded a vast pool of country- and institutional-level awards. Third, we considered only journal awards that are not limited to research from certain biomes or geographical regions. Fourth, we did not assess other types of awards (for example, for service, mentoring, teaching, outreach and awards limited by gender or other minority status) although these are probably

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Table 2 | Assessments of the included best paper awards for their equity, transparency and recognition of open science practices

Award name	Flexible eligibility allowed	Self-nomination allowed	No nomination letter	Inclusivity statement present	Assessor transparency	Process transparency ensured	Criteria transparency ensured	Open science practice valued	Feedback available
Mol. Biol. Evol./SMBE Best Graduate Student Paper	No	Yes	No	No	No	No	No	No	No
Genome Biol. Evol./SMBE Best Graduate Student Paper	No	Yes	No	No	No	No	No	No	No
Any journal/ESA George Mercer Award	No	?	No	No	Yes	No	No	No	No
J. Evol. Biol./ESEB Stearns Graduate Student Prize	No	Yes	Yes	No	Yes	No	No	No	No
Evolution/SSE Outstanding Dissertation Award	Yes	Yes	No	No	No	No	No	No	No
Am. Nat./ASN Student Paper Award	Yes	No	Yes	No	Yes	No	No	No	No
Methods Ecol. Evol./BES Robert May Prize	Yes	Yes	Yes	No	Yes	No	No	No	No
Funct. Ecol./BES Haldane ECR Award	Yes	Yes	Yes	No	Yes	No	No	No	No
Ecol. Lett./CNRS ECR Award	No	Yes	Yes	No	Yes	No	No	No	No
J. Exp. Biol./CoB Outstanding Paper Prize	No	Yes	Yes	No	No	No	No	No	No

Detailed descriptions of extracted data are available in Supplementary Table 6. We considered 'yes' answers as potentially beneficial for EDI. Unclear answers as represented as '?'. Award names are preceded by the abbreviated name of a granting journal/organization. CoB, Company of Biologists; other society names abbreviation as in Table 1.

increasing in number and importance. These four restrictions have been necessary due to time constraints. We assumed that international and general ecology/evolution awards would be most representative of the early- and mid-career research awards and that these awards are also likely to be considered prestigious (at least more prestigious than any country- or institution-level awards). We believe that collecting data on a broader range of research-focused awards would not substantially change the survey's general conclusions and recommendations. Nevertheless, future work could be directed to providing a more fine-grained picture of a landscape across subdisciplines and countries, similarly to what has been happening in the surveys of gender bias in award winners.

Gender bias has been at the centre of attention when it comes to under-representation and under-recognition in academia (for example, refs. 4,7–9,24,29,32). In contrast, there are few studies on research recognition focusing on biases other than gender, such as race and ethnicity (for example, ref. 33), intersectional diversity (more than one diversity aspect, for example, refs. 34,35) and none on disability. Such studies are difficult because detailed demographic information is seldom collected and shared. It is relatively easy to derive a person's gender from a name or image, where available (we acknowledge that it is harder for non-binary people and non-Western names[36]). However, the data on the many other dimensions of diversity, such as ethnicity, non-binary gender, sexual orientation, disability, caring responsibilities, employment and educational history and access to resources, are more subtle, complicated and hidden[37]. For example, people with traditional Western first names may not necessarily live in or originate from a Western country.

Advocates of open science often list improving equity as one of their key objectives[38]. However, it is possible that certain open science practices, such as article processing fees for open access publications[39] and differences in access to digital infrastructures[40,41], may deepen pre-existing inequalities or create new ones[42]. Indeed, the holistic idea of open science may not necessarily build more equitable scientific environment. Yet, there are open practices that do not rely on costly or closed systems and, by increasing transparency and collaboration, can benefit equity and diversity[43]. For example, data and code and other documentation can usually be shared using free and open infrastructure (for example, on GitHub, Zenodo and OSF), while relevant education and skill training are provided freely by many grassroots open science communities and organizations[44].

Finally, what changes can be made to the awards themselves to move towards addressing biases other than gender? Our survey already highlighted some instances of desirable practices, such as accommodating career interruptions, assessing achievements relative to opportunity and rewarding open research practices, in a sample of 23 awards. It also revealed that there is still much to be done. We next provide 12 general recommendations for improvements.

Recommendations

Our suggestions for improvement are generally derived from existing recommendations for academic assessments (such as DORA[45] and refs. 23,26,46,47) and personal experiences. They also align with recommendations collated recently by early- and mid-career researchers participating in a series of workshops held by the Australian Academy of Science[48] (http://www.go.nature.com/39j5yus) and by a group of Latina and Black researchers[10]. Uniquely, our suggestions also include points related to transparency and robustness of the science itself. Figure 4 shows our 12 steps (without implying specific order) on where we still need to strive in terms of equity, diversity and better research practices. Below, we discuss these steps in detail, highlighting why we should and how we can address problems with the current academic recognition prizes. The recommendations are grouped into applications, assessment and outcomes stages.

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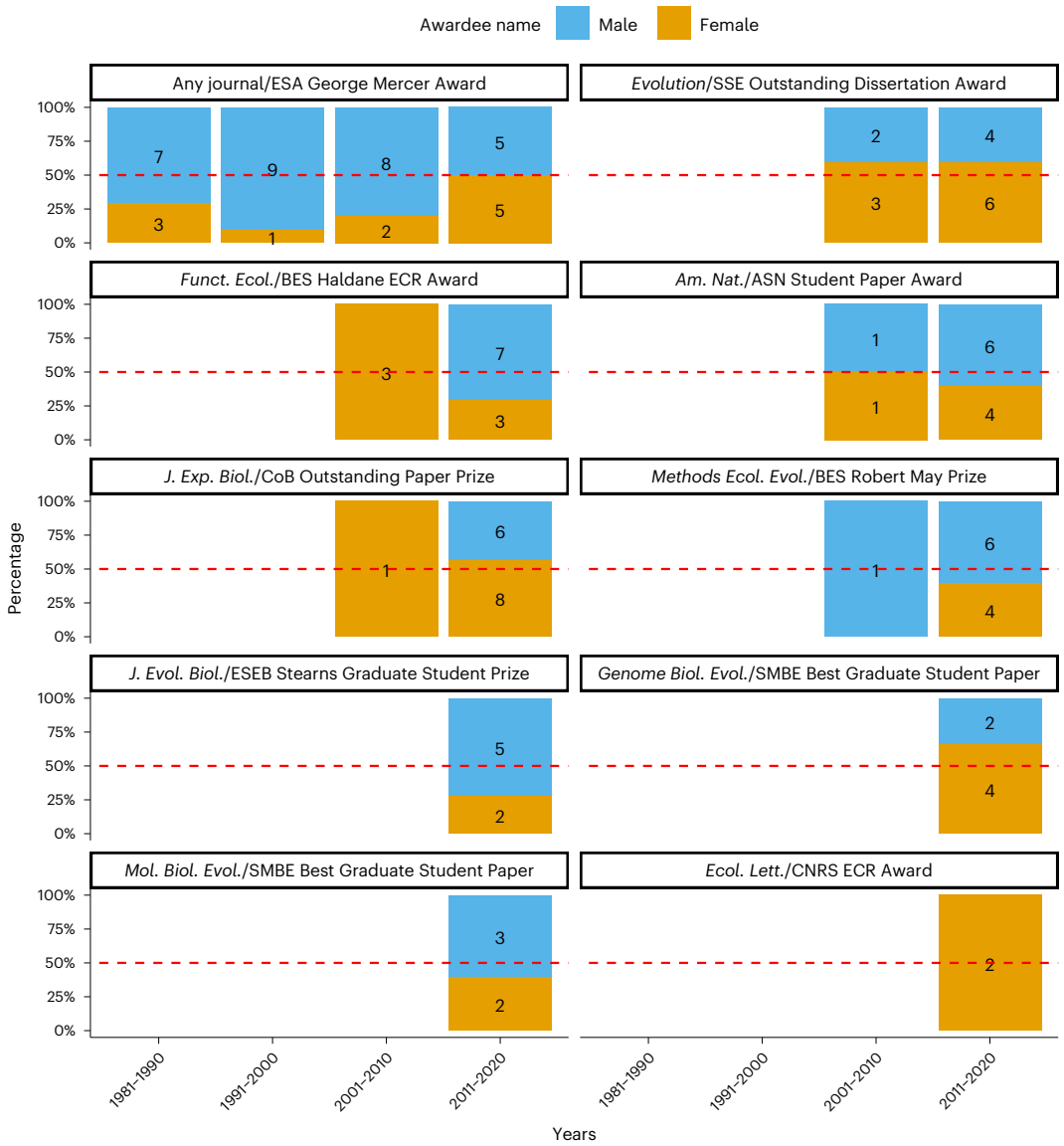

Fig. 3 | Plot of the percentages of the female and male names for included best paper awards across decades. Award names are preceded by the abbreviated name of a granting journal. Numbers on the bars are counts of awardees.

Recommendations for applications:

(1) Encourage historically under-represented groups to apply. Recognizing all types of researchers that work at all levels of the academia is only possible if a representative pool of applicants is considered for an award. This can be achieved by both advertising broadly[26] but also by providing explicit encouragement for the groups that are systemically disadvantaged and/or discriminated against, including women, LGBTQIA+ (lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more) people, non-binary people, racial or ethnic minorities, non-English native speakers, persons with disabilities or caring responsibilities and those from developing countries and working in institutions without historical international standing. Such a message would signal that EDI is taken seriously by the awarding body.

(2) Adjust eligibility timelines for career interruptions. Using hard caps for applicants' biological or academic age penalizes individuals with non-traditional careers, whose career has been interrupted or slowed down by personal or external circumstances[49]. We note that a growing number of awarding bodies allow for flexible eligibility timelines in 'exceptional circumstances'—flexibility should become the norm, rather than an exception.

(3) Retire nomination/support letters. These letters are subjective narratives that manifest recognition that others have endowed upon a researcher[50–52]. They specifically reflect privilege of access to the old boys' networks, institutional prestige and other circumstantial contexts[3,49]. Support and nomination letters drain precious time from senior academics, who may be reluctant to heartfully endorse applicants considered as unlikely winners or delegate drafting the letters to the applicants themselves[53,54]. Thus, rather than providing objective assessments, these letters can compound existing biases[33,51]. Less biased information can be provided via standardized and structured forms (with word limits for each section) when input from the recommenders is essential[55].

(4) Allow self-nomination. Self-nomination circumvents the problem of the access to suitable nominators, also that of the prestige and influence of the nominators[13,33]. For 'best paper' awards it is already commonly implemented during the submission stage (by simply ticking an eligibility box). However, when

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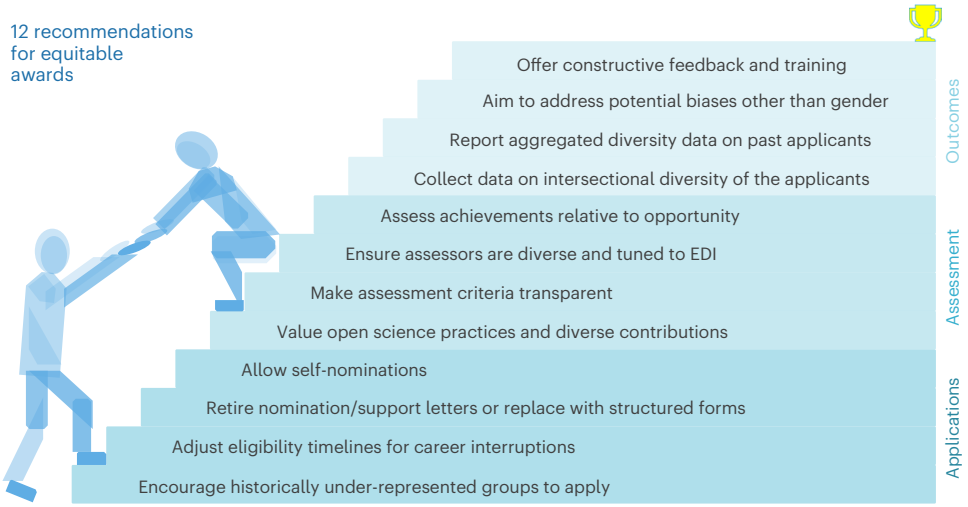

Fig. 4 | Striving to make early- and mid-career awards more equitable—recommendations for improvement. The order of recommendations mainly represents three stages of the awarding process: applications, assessment and outcomes. The order of recommendations does not imply how important they are but recommendations closer to the bottom can be easier to implement than those closer to the top. For detailed descriptions of individual recommendations, please see the main text.

self-nomination involves writing unstructured narrative letters about yourself, this would give advantage to these with self-confidence, mastery of English language and storytelling, rather than the actual quality of research. As such, a simpler and standardized format, such as proposed structured CVs[46], could level the playing field.

Recommendations for assessment:

(5) Value open science practices and diverse contributions. Open data, open code and transparent description of methodological details can represent not only the trustworthiness of science[56] but also a valuable academic contribution. Following these and other open science practices (for example, preregistrations, self-corrections and use of reporting checklists) can lead to more robust and replicable science[57]. However, the award committees should also recognize that sometimes there might be legitimate reasons for not openly sharing data or code[58]. For best researcher awards, assessment could explicitly value contributions beyond producing publications, such as mentoring, collaborations, community service and advocacy[48]. This would bring more recognition to non-research achievements and awards.

(6) Make assessment criteria transparent. Pervasive use of broad terms, such as 'outstanding contributions', for describing the criteria for the award can make the application process more daunting for less confident applicants. It can also mask implicit biases in the assessment process[23]. By abandoning the rhetoric of generic 'excellence'[23] and revealing how the work will be assessed with objective prespecified criteria[10,47], we can encourage more diverse applicants and robust and impactful science[59]. It does not impose that all awards use the same set of criteria.

(7) Ensure assessors are diverse and tuned to EDI. Diverse award panels are more likely to select diverse winners[26]. The lists of selection panel members could be made publicly available to signal commitment to promoting diversity. The panels should be aware of EDI policies and their own biases, ideally working with EDI committees supporting and advocating for historically under-represented groups[10,13].

(8) Assess achievements relative to opportunity. Given pervasive inequalities in access to opportunities and resources in academia, seriously considering systemic barriers and biases faced by the applicants may level the playing field for those starting their careers from underprivileged positions[23,30]. It also alleviates impact of nonlinear/interrupted academic careers paving the way for fairer evaluation of people with diverse backgrounds[48,60]. To achieve this, award applications could include a brief section on the barriers or constraints the applicant faced in their research.

Recommendations for outcomes:

(9) Collect data on intersectional diversity of the applicants. Robust data could support development of effective policies for EDI[11,61]. As journals are finally starting to collect demographic data for their own purposes[62], learned societies could follow suit by encouraging members and award applicants to self-identify in relation to at least their gender, race or ethnicity (ideally also on other intersectional aspects of diversity or opportunity)[33]. For the best paper awards, journal-collected intersectional diversity data could be made available to the awarding bodies, possibly complemented by additional information sourced from the nominated authors, for example, on their financial, logistical or time constrains, to equitably assess their research achievements, relatively to opportunities.

(10) Report aggregated intersectional diversity data on past applicants. A lack of diversity data currently hinders analyses on whether the award recipients are representative of the pool of the applicants[63,64]. While publishing individual data is not advisable due to privacy concerns, aggregated anonymous information could be published for each round of a given award. Such data are needed for meta-research on the biases and trends in scientific awards[9] and can be used to justify calls for action[13].

(11) Aim to address potential biases other than gender. For many early- and mid-career awards it is time to move the equity target beyond the gender bias. Gender-related disadvantage in academia is compounded by race, ethnicity, caring responsibilities, sexual orientation, socioeconomic status, geographic location, language background, disability and so on[10,33,37,65,66]. These biases need more visibility and action.

(12) Offer constructive feedback and training. Brief but constructive feedback would allow the unsuccessful applicants to better

prepare for the next application cycle[67]. To save time, it can be provided 'on request only' but such an option should be clearly advertised to the applicants. Another option is to provide support to applicants through workshops and webinars explaining the process and teaching them how to write successful applications. Feedback should also be gathered from the applicants and committee members and used for improving all stages of the award application and assessment process[30,47].

Conclusions

Growing awareness of the unconscious biases and systemic barriers to women and other historically under-represented groups can be used to build more equity in the scientific recognition systems. The aim is not to turn research prizes into charity but to level the playing field. Scientific societies and journal editors have power and freedom to take grassroots actions for redressing historical biases beyond those related to gender. We hope our work will nudge award committees to shift from simple but non-equitable award policies towards strategies promoting inclusivity and diversity—benefiting not only those at early- and mid-career stages but also the whole research community. Finally, we propose an overlaying concept of open awards—a movement to ensure equitable access, assessment and information sharing, in line with broad principles of open science, as exemplified by this article.

Methods

We preregistered a detailed plan of this study on the Open Science Framework (https://osf.io/pwngy/). The Supplementary Methods describes all alterations to the planned procedures and contains a detailed description of our search, screening and data extraction.

In brief, we aimed to assess a representative sample of broad-relevance international awards in ecology and evolution awarded to early- or mid-career researchers for either overall achievements or a single publication. By broad-relevance we mean awards from societies and journals that encompass any aspects of ecology or evolution without restrictions on the studied taxa, systems or geographic locations. We excluded travel awards, awards specifically given for teaching, outreach and presentations, awards for minority groups and awards where only a project proposal is assessed. Supplementary Fig. 1 represents our workflow. We started from creating lists of potentially eligible international societies and journals (we allowed for the regional ones, where clearly more than one country is involved, for example, African, pan-American and linked by a shared language). To create our shortlists, we conducted Internet searches (https://DuckDuckGo.com) using predefined search strings, accessed websites containing lists of potentially relevant international learned societies and looked at the top 50% of journals from the Scimago journal ranking list. For each society or journal meeting our predefined criteria, we checked if they advertise any awards that might be classified as 'best researcher' or 'best paper' category. The best researcher awards category included prizes recognizing overall achievements and the best paper awards category included prizes recognizing a single published article of an early- to mid-career researcher in broad fields of ecology and/or evolution. All eligibility decisions have been cross-checked by a second researcher and unclear cases were discussed until consensus was reached. For each award, its eligibility for inclusion was confirmed at the initial phase of data extraction and, if deemed not eligible, an award was excluded and no further data were extracted.

From the eligible awards we extracted information on the awarding body (usually a learned society and/or journal), including whether it had policies or organizational structures for supporting EDI. We then extracted information on the award, including its name, type, target career stage of eligible applicants, whether eligibility criteria are flexible and whether assessment is conducted relative to opportunity. We coded whether published assessment criteria are vague or detailed/specific, if they consider multiple dimensions of contributions to science and research excellence (for example, engagement in outreach, mentoring, reviewing and advocacy), whether any open science practices (data, code, materials sharing, preregistration, transparency of reporting and so on) are explicitly included in the assessment criteria and if requests for feedback on unsuccessful applications are allowed. We also coded whether applicants can self-nominate, whether nomination or support letters are required and whether the award information specifically encourages historically under-represented groups to apply. Finally, we checked if information was available on who will be assessing the application and on the diversity of the past applicants. We contacted the award committee/contact person for clarifications in several cases where publicly available information was unclear.

We assigned gender to the names of the past winners listed on the award websites, based on the first names, pronouns or images, as available. We collected ad hoc data on the countries of winners' affiliations. All extracted data were cross-checked by a second researcher. We summarized our data collection process in tables and visualized key extracted data in graphs using the tidyverse package[68] in R computational environment[69]. We used R package lme4 (ref. 70) to fit generalized mixed model with binomial error family, logit link function and award identity as a random effect, to estimate the gender bias in the awardees names across decades. We performed exploratory analyses on geographic distribution of the affiliations of the past winners and their first names (Supplementary Methods).

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

Data availability

All analysed data for producing figures are available on GitHub (https://github.com/mlagisz/survey_ecoevo_awards) and archived on Zenodo (https://doi.org/10.5281/zenodo.7558224)[71].

Code availability

All analysed code for producing figures are available on GitHub (https://github.com/mlagisz/survey_ecoevo_awards) and archived on Zenodo (https://doi.org/10.5281/zenodo.7558224)[71].

References

1. Zuckerman, H. Stratification in American science. *Sociol. Inq.* **40**, 235–257 (1970).
2. Merton, R. K. The Matthew effect in science. *Science* **159**, 56–63 (1968).
3. Ma, Y. & Uzzi, B. Scientific prize network predicts who pushes the boundaries of science. *Proc. Natl Acad. Sci. USA* **115**, 12608–12615 (2018).
4. Modgil, S., Gill, R., Lakshmi Sharma, V., Velassery, S. & Anand, A. Nobel nominations in science: constraints of the fairer sex. *Ann. Neurosci.* **25**, 63–78 (2018).
5. Gibney, E. 'More women are being nominated': Nobel academy head discusses diversity. *Nature* https://doi.org/10.1038/d41586-019-02988-5 (2019).
6. Charlton, B. G. Which are the best nations and institutions for revolutionary science 1987–2006? Analysis using a combined metric of Nobel prizes, Fields medals, Lasker awards and Turing awards (NFLT metric). *Med. Hypotheses* **68**, 1191–1194 (2007).
7. Naime, S. & Karroum, E. G. Women are underrepresented in major US sleep societies recognition awards. *J. Clin. Sleep. Med.* **17**, 1665–1673 (2021).

8. Fang, A. C., Chekijian, S. A., Zeidan, A. J., Choo, E. K. & Sethuraman, K. N. National awards and female emergency physicians in the United States: is the 'recognition gap' closing? *J. Emerg. Med.* **61**, 540–549 (2021).
9. Lincoln, A. E., Pincus, S., Koster, J. B. & Leboy, P. S. The Matilda effect in science: awards and prizes in the US, 1990s and 2000s. *Soc. Stud. Sci.* **42**, 307–320 (2012).
10. Calaza, K. C. et al. Facing racism and sexism in science by fighting against social implicit bias: a Latina and Black woman's perspective. *Front. Psychol.* **12**, 671481 (2021).
11. Llorens, A. et al. Gender bias in academia: a lifetime problem that needs solutions. *Neuron* **109**, 2047–2074 (2021).
12. Shandera, S., Matsick, J. L., Hunter, D. R. & Leblond, L. RASE: modeling cumulative disadvantage due to marginalized group status in academia. *PLoS ONE* **16**, e0260567 (2021).
13. Cadwalader, E. L., Herbers, J. M. & Popejoy, A. B. in *Gender Transformation in the Academy* Vol. 19, 243–263 (Emerald Group, 2014).
14. Heffner, A. G. Authorship recognition of subordinates in collaborative research. *Soc. Stud. Sci.* **9**, 377–384 (1979).
15. Sá, C., Cowley, S., Martinez, M., Kachynska, N. & Sabzalieva, E. Gender gaps in research productivity and recognition among elite scientists in the U.S., Canada, and South Africa. *PLoS ONE* **15**, e0240903 (2020).
16. Trix, F. & Psenka, C. Exploring the color of glass: letters of recommendation for female and male medical faculty. *Discourse Soc.* **14**, 191–220 (2003).
17. Hargrove, J. S. Gender bias in letters of recommendation. *Fisheries* **47**, 289–289 (2022).
18. Skibba, R. Women postdocs less likely than men to get a glowing reference. *Nature* https://doi.org/10.1038/nature.2016.20715 (2016).
19. Ross, M. G. & Beall, M. H. Adult sequelae of intrauterine growth restriction. *Semin. Perinatol.* **32**, 213–218 (2008).
20. Baum, J. & Martin, T. It is time to overcome unconscious bias in ecology. *Nat. Ecol. Evol.* **2**, 201 (2017).
21. Moore, S., Neylon, C., Paul Eve, M., Paul O'Donnell, D. & Pattinson, D. 'Excellence R Us': university research and the fetishisation of excellence. *Palgrave Commun.* **3**, 16105 (2017).
22. Allen, C. & Mehler, D. M. A. Open science challenges, benefits and tips in early career and beyond. *PLoS Biol.* **17**, e3000246 (2019).
23. Hatch, A. & Curry, S. Changing how we evaluate research is difficult, but not impossible. *eLife* **9**, e58654 (2020).
24. Meho, L. I. The gender gap in highly prestigious international research awards, 2001–2020. *Quant. Sci. Stud.* **2**, 976–989 (2021).
25. Hansson, N. & Schlich, T. Beyond the Nobel Prize: scientific recognition and awards in North America since 1900. *Notes Rec.* https://doi.org/10.1098/rsnr.2022.0015 (2022).
26. James, A., Chisnall, R. & Plank, M. J. Gender and societies: a grassroots approach to women in science. *R. Soc. Open Sci.* **6**, 190633 (2019).
27. Silver, J. K. et al. Women physicians underrepresented in American Academy of Neurology recognition awards. *Neurology* **91**, e603–e614 (2018).
28. Wehi, P. M., Beggs, J. R. & Anderson, B. J. Leadership and diversity in the New Zealand Ecological Society. *NZ J. Ecol.* **43**, 3368 (2019).
29. Watson, C. Women less likely to win major research awards. *Nature* https://doi.org/10.1038/d41586-021-02497-4 (2021).
30. Pourret, O. et al. Diversity, equity, and inclusion: tackling under-representation and recognition of talents in geochemistry and cosmochemistry. *Geochim. Cosmochim. Acta* **310**, 363–371 (2021).
31. Krause, S. & Gehmlich, K. *Does the Persistent Lack of Female Recipients of Academic Awards Have to Surprise us if few Scientific Prizes and Medals are Named after Women?* (EGU General Assembly, 2022); https://doi.org/10.5194/egusphere-egu22-2562
32. Sanderson, K. Researchers voice dismay at all-male science Nobels. *Nature* https://doi.org/10.1038/d41586-021-02782-2 (2021).
33. Jan, Y. N. Underrepresentation of Asian awardees of United States biomedical research prizes. *Cell* **185**, 407–410 (2022).
34. Jumreornvong, O. et al. Analysis of physician recipients of recognition awards from the American Academy of Physical Medicine and Rehabilitation by Race and Ethnicity. *PM&R* https://doi.org/10.1002/pmrj.12792 (2022).
35. Khelifa, R. & Mahdjoub, H. An intersectionality lens is needed to establish a global view of equity, diversity and inclusion. *Ecol. Lett.* **25**, 1049–1054 (2022).
36. Santamaría, L. & Mihaljević, H. Comparison and benchmark of name-to-gender inference services. *PeerJ Comput. Sci.* **4**, e156 (2018).
37. Wanelik, K. M., Griffin, J. S., Head, M. L., Ingleby, F. C. & Lewis, Z. Breaking barriers? Ethnicity and socioeconomic background impact on early career progression in the fields of ecology and evolution. *Ecol. Evol.* **10**, 6870–6880 (2020).
38. Ross-Hellauer, T. et al. Dynamics of cumulative advantage and threats to equity in open science: a scoping review. *R. Soc. Open Sci.* **9**, 211032.
39. Olejniczak, A. J. & Wilson, M. J. Who's writing open access (OA) articles? Characteristics of OA authors at Ph.D.-granting institutions in the United States. *Quant. Sci. Studies* **1**, 1429–1450 (2020).
40. Albornoz, D. et al. *Framing Power: Tracing Key Discourses in Open Science Policies* (ElPub, 2018); https://doi.org/10.4000/proceedings.elpub.2018.23
41. Bezuidenhout, L. & Havemann, J. The varying openness of digital open science tools. *F1000Research* **9**, 1292 (2021).
42. Ross-Hellauer, T. Open science, done wrong, will compound inequities. *Nature* **603**, 363–363 (2022).
43. Grahe, J. E., Cuccolo, K., Leighton, D. C. & Cramblet Alvarez, L. D. Open science promotes diverse, just, and sustainable research and educational outcomes. *Psychol. Learn. Teach.* **19**, 5–20 (2020).
44. Armeni, K. et al. Towards wide-scale adoption of open science practices: the role of open science communities. *Sci. Public Policy* **48**, 605–611 (2021).
45. Hoppeler, H. The San Francisco declaration on research assessment. *J. Exp. Biol.* **216**, 2163–2164 (2013).
46. Strinzel, M., Brown, J., Kaltenbrunner, W., de Rijcke, S. & Hill, M. Ten ways to improve academic CVs for fairer research assessment. *Humanit. Soc. Sci. Commun.* **8**, 251 (2021).
47. Holmes, M. A., Myles, L. & Schneider, B. Diversity and equality in honours and awards programs—steps towards a fair representation of membership. *Adv. Geosci.* **53**, 41–51 (2020).
48. Wong, V. N. L. & Shaw, J. D. Build diversity among science prize winners. *Nature* **580**, 185–185 (2020).
49. Mervis, J. *NSF's Uphill Road to Making Prestigious Early Career Award More Diverse* (ScienceInsider, 2017); https://www.science.org/content/article/nsf-s-uphill-road-making-prestigious-early-career-award-more-diverse
50. Dutt, K., Pfaff, D. L., Bernstein, A. F., Dillard, J. S. & Block, C. J. Gender differences in recommendation letters for postdoctoral fellowships in geoscience. *Nat. Geosci.* **9**, 805–808 (2016).
51. Madera, J. M., Hebl, M. R., Dial, H., Martin, R. & Valian, V. Raising doubt in letters of recommendation for academia: gender differences and their impact. *J. Bus. Psychol.* **34**, 287–303 (2019).

52. Go, C. & Sachdev, U. Letters of recommendation: nuanced bias or useful affirmation? *J. Vasc. Surg.* **74**, 29S–32S (2021).
53. Parrilla Gutierrez, J. M. Support letters: mostly ghost-written, always glowing. What's the point? *Nature* https://doi.org/10.1038/d41586-021-02374-0 (2021).
54. Wilkes, R. Retire the letter of reference. *Science* **351**, 630–630 (2016).
55. Liu, O. L., Minsky, J., Ling, G. & Kyllonen, P. Using the standardized letters of recommendation in selection: results from a multi-dimensional Rasch model. *Educ. Psychol. Meas.* **69**, 475–492 (2009).
56. Jamieson, K. H., McNutt, M., Kiermer, V. & Sever, R. Signaling the trustworthiness of science. *Proc. Natl Acad. Sci. USA* **116**, 19231–19236 (2019).
57. O'Dea, R. E. et al. Towards open, reliable, and transparent ecology and evolutionary biology. *BMC Biol.* **19**, 68 (2021).
58. Perrier, L., Blondal, E. & MacDonald, H. The views, perspectives, and experiences of academic researchers with data sharing and reuse: a meta-synthesis. *PLoS ONE* **15**, e0229182 (2020).
59. Mejlgaard, N. et al. Research integrity: nine ways to move from talk to walk. *Nature* **586**, 358–360 (2020).
60. Hill, B., Secker, J. & Davidson, F. in *Gender Transformation in the Academy* Vol. 19, 85–107 (Emerald Group, 2014).
61. Choudhury, S. & Aggarwal, N. K. Reporting grantee demographics for diversity, equity, and inclusion in neuroscience. *J. Neurosci.* **40**, 7780–7781 (2020).
62. Else, H. & Perkel, J. M. The giant plan to track diversity in research journals. *Nature* **602**, 566–570 (2022).
63. Diversity in science prizes: why is progress so slow? *Nature* **606**, 433–434 (2022).
64. Gibney, E. Women more likely to win awards that are not named after men. *Nature* https://doi.org/10.1038/d41586-022-01506-4 (2022).
65. Prisle, N. & Salamon, K. L. 'Things take time'—but how long is that, exactly? Language as a structural barrier contributing to the underrepresentation of women, ethnic, and linguistic minorities in Academia. In *Proc. 20th EGU General Assembly* 15816 (EGU, 2018).
66. Kozlowski, D., Larivière, V., Sugimoto, C. R. & Monroe-White, T. Intersectional inequalities in science. *Proc. Natl Acad. Sci. USA* **119**, e2113067119 (2022).
67. Cohen, G. L., Steele, C. M. & Ross, L. D. The mentor's dilemma: providing critical feedback across the racial divide. *Personal. Soc. Psychol. Bull.* **25**, 1302–1318 (1999).
68. Wickham, H. et al. Welcome to the Tidyverse. *J. Open Source Softw.* **4**, 1686 (2019).
69. R Core Team. *R: A Language and Environment for Statistical Computing* (R Foundation for Statistical Computing, 2013).
70. Bates, D., Mächler, M., Bolker, B. & Walker, S. Fitting linear mixed-effects models using lme4. *J. Stat. Softw.* **67**, 1–48 (2015).
71. Lagisz, M. et al. Data and code for: 'Little transparency and equity in scientific awards for early and mid-career researchers in ecology and evolution'. *Zenodo* https://doi.org/10.5281/zenodo.7558224 (2023).

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Author contributions

Conceptualization, methodology, data curation, visualization, funding acquisition and preparation of the original draft were undertaken by M.L. Formal analysis and supervision were by S.N. Data curation and investigation were carried out by U.A., B.A., J.R., A.S.-M. and C.E.L. All authors reviewed and edited the final manuscript.

Competing interests

M.L. received funding from ESEB. The funder had no role in study design, data collection, data analyses, visualization or interpretation. M.L. is a regular member of ESEB and a Chair of the Equity Diversity and Inclusion Committee of SORTEE. U.A. is a member of ESEB, SSE, AES and SORTEE. B.A. is a SORTEE member. S.N. is a member of ESEB and SORTEE. All remaining authors declare no competing interests.

Additional information

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Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	GoogleForms and GoogleSheets were used as a platform for collaborative data collection
Data analysis	For summarising and visualising data we used R version 4.1.1 (2021-08-10), with the following R packages: tidyverse_1.3.1 and ggplot2_3.3.6

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio guidelines for submitting code & software for further information.

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All analysed data and code for producing figures are available on GitHub (https://github.com/mlagisz/survey_ecoevo_awards) and the final version will be archived on Zenodo.

Human research participants

Policy information about studies involving human research participants and Sex and Gender in Research.

Reporting on sex and gender	The research did not directly involve human participants. However, secondary data was sourced from the websites and, where relevant, it was analysed in relation to the gender inferred from the first names.
Population characteristics	The research did not directly involve human participants.
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Ethics oversight	The research did not directly involve human participants and did not require ethics approval.

Note that full information on the approval of the study protocol must also be provided in the manuscript.

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Ecological, evolutionary & environmental sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	The manuscript is based on a pre-registered survey of the characteristics and winners of the existing “best researcher” and “best paper” awards representing broad ecology and evolution research. We present the results of our survey and provide suggestions for improvements aimed towards greater transparency, diversity, and inclusivity of the access and assessment process for research awards.
Research sample	A sample of broad-relevance international awards in ecology and evolution awarded to early- or mid-career researchers for either overall achievements or a single publication.
Sampling strategy	We started from creating lists of potentially eligible international societies and journals. We then checked if any of these award prizes fit our pre-defined criteria. The “Best Researcher” awards category included prizes recognizing overall achievements, and the “Best Paper” awards category included prizes recognizing a single published article, of an early to mid-career researchers in broad fields of ecology and / or evolution. For each award, its eligibility for inclusion was confirmed at the initial phase of data extraction, and if deemed not eligible, an award was excluded, and no further data was extracted.
Data collection	From the eligible awards we extracted information on the awarding body (usually a learned society and / or journal), including whether it had policies or organisational structures for supporting Equity, Diversity, and Inclusion. We then extracted information on the award, including its name, type, target career stage of eligible applicants, whether eligibility criteria are flexible and whether assessment is conducted relative to opportunity. We coded whether published assessment criteria are vague or detailed / specific, if they consider multiple dimensions of contributions to science and research excellence (e.g., engagement in outreach, mentoring, reviewing, advocacy), whether any Open Science practices (data, code, materials sharing, preregistration, transparency of reporting, etc.) are explicitly included in the assessment criteria, and if requests for feedback on unsuccessful applications are allowed. We also coded whether applicants can self-nominate, whether nomination or support letters are required, and whether the award information specifically encourages historically underrepresented groups to apply. Finally, we checked if information was available on who will be assessing the application, and on the diversity of the past applicants. We assigned gender to the names of the past winners listed on the award websites, based on the first names, pronouns, or images, as available. We collected ad hoc data on the countries of first affiliations. All extracted data was cross-checked by a second researcher.
Timing and spatial scale	The data was collected in March-October 2022, globally.
Data exclusions	"SORTEE Open Science in Practice Award" was excluded from the analyses of gender bias in past awardees names across decades because it deed not have any awardees at the time of the data collection (this award was established in 2022).
Reproducibility	The study is not experimental and is based on a targeted survey of the awards for research in ecology and evolution. All extracted data and code are openly available so the results of the analyses could be reproduced.
Randomization	Randomization is not relevant to this study as no experimental manipulations were conducted.
Blinding	Blinding is not relevant to this study as no experimental manipulations were conducted. Blinding during data extraction was not possible because data was extracted from the websites of journals and learned societies.

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Methods

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