

Reply to ‘Questionable survey methods generate a questionable list of recommended articles’

To the Editor — In response to Mayer and Wellstead¹, we take the opportunity to clarify here several components of our original article², which they claim was flawed on four grounds: inaccurate information; small sample and low representativeness; low response rate; and no correction for non-response bias.

The main issue invoked in this critique is that our pool of respondents was “biased” and not “representative” of our sample population or the ecological community as a whole. We argue that these issues are not relevant in this case, because these statistical terms apply only to non-representative or inaccurate measurements that attempt to estimate a true value of a population from a sample. We attempted no such estimation or representation. We clearly specified that our respondents were the editorial board members of six general ecology journals and members of the Faculty of 1000 Ecology section, and no more than this. However, we could have been clearer in the original article that the main results should be interpreted in light of the specific pool of respondents, and not the entire ecological community (which has since clearly emerged as a point of confusion). We do, of course, agree that ecology as a discipline (as well as all facets of science) would benefit greatly from fostering more diversity and inclusivity, but this has nothing to do with our article.

Inaccurate information

The information we provided was accurate, and we stand by our numbers. The sum of voters who declared to be men (292), declared to be women (62) and did not give a gender (14) equals 368. This is clear from our article: “Similarly, and for articles for which we had information on the gender of the voter, there were 62 women and 292 male voters”, page 4, second column². As for the number of respondents, we indeed wrote that 147 responded, whereas it was in fact 151. However, we clarify that this error does not affect any of the main conclusions, because we did not use the number of respondents in any of the analyses. The number highlighted by Mayer and Wellstead¹ of 113 corresponds to those who proposed papers, for which we presented an identical figure (12 women and 101 men)³, so there is no inaccuracy there either.

Small sample and representativeness

We never contended, nor was it our aim, to represent the global population of ecologists from the pool of experts we approached, nor did we set out to test any hypotheses requiring representative sampling. Our aim, as stated in the text², was instead to solicit the opinions of some established experts (that is, by virtue of being an active editor for a high-profile journal, we assumed that they had been recognized for — and then honed — their expertise in judging the relative importance of scientific articles) in what we openly admit was targeted to ascertain what this particular community of experts thought were noteworthy articles. We of course recognize these editorial boards do not reflect the demographics of all practising ecologists⁴ — the point is not relevant because we never claimed it to be so; however, because we had also asked responders to state their gender, country of education and scientific experience, we were able to examine post hoc trends from that pool.

The gender of the pool of responding editors was dominated by men (22.1% women), but no more so than the overall pool of 22.8% of female co-authors in the general discipline of ecology and evolution⁵, or the 24% of female corresponding authors on manuscripts submitted to *Nature Ecology & Evolution*⁶ in 2017. It is therefore likely that the proportion of women in our pool reflects that of publishing women in the field. It is also essential to realize that when we considered only female editors’ votes, the authors of the resulting recommended list were still dominated by men³, with 96 articles first-authored by men³, instead of 98. This further highlights that the gender ratio of the authors of the list is not driven by the gender ratio of the editors.

Neither did we aim to be “representative”^{1,7} of all facets of ecology. Nonetheless, we paid attention to contact only editors in journals of general ecology, removing all journals focused on sub-disciplines² to avoid overtly weighting any particular subdiscipline more relative to others. However, there is no way to prove or disprove a discipline bias in the recommended articles, nor any reason to believe there is one. Lastly, even though

larger samples are nearly always better if one is attempting to estimate the true value of a population (which we were not), we feel that our pool of 665 editors reflects a relatively large sample of all editors in journals of ecology.

Low response rate

As we explained above, as we did not set out to test any hypotheses or claim to represent any community, the concern of Mayer and Wellstead¹ that our methodology might not necessarily meet with those of social science studies is not relevant, and so there is no need to target a specific response rate. Regardless, we did our best to boost response rates by sending several reminders to non-responders (three e-mails over 36 days, and then three additional e-mails over 35 days). We also set no target sample size, but are satisfied that the responses of 151 editors reflect a large enough sample from which to establish a useful recommended reading list of 100 articles. We could have chosen to request recommendations for a reading list of even fewer editors, for example, only a few recipients of the most prestigious international awards in our discipline, illustrating additionally how respondent numbers are not relevant here.

No correction for non-response bias

Regarding the proportion of male and female editors that responded to the survey, we showed in our follow-up analysis³ that women did propose articles with a higher average proportion of female authors than men did, and because the proportion of women in the editor population that responded was lower than that of men, one could hypothesize that the final list of 100 articles might have been different if the proportions were equal. While we recognize that gender balance is a timely and important issue in science, the recommendations of Mayer and Wellstead¹ would also apply to many other social factors including age, ethnicity, social class, religion, geography, sexual orientation, disability and other factors — these too, fortunately, have nothing to do with the ability to produce good science⁸. Compensating for lower response rates within all social categories by re-surveying some non-respondents would be impractical and illogical; and as we stated

above, it would also be irrelevant because representativeness was not the objective.

In conclusion, we do not accept that our methodology was flawed as claimed¹, and we agree that a reading list recommended by a different pool of experts would probably have been different; this was in fact a conclusion of our original article². Consequently, we stress that the gender bias in authors of our recommended must-read list is less due to a bias of our approach/pool of respondents, than to biases in our entire discipline, in particular those that were more prevalent a few decades ago, given that the recommended articles were mostly classics from a median of 38 years ago²; as a result, any list entirely balanced in this regard would reveal a deliberate bias in the opposite direction and an attempt to rewrite the

history of ecology. Being blamed for these biases is equivalent to being accused of bias when proposing a list of historical, milestone laws authored by US senators, who happen to have been mostly men. While we are of course cognizant that sampling editorial board members does not reflect the demographics of the entire ecological community, we contend that the resulting compilation still represents a relevant and useful reading list recommended by experts across many sub-disciplines in the field. □

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Competing interests

The authors declare no competing interests.