Taking steps towards diversifying priority setting research in conservation science: reflections on de Gracia (2021)

There is growing awareness across many branches of science of the need to decolonize research practices and curricula (Aikenhead, 2006; Radcliffe, 2017), and the fields of ecology and conservation are no exception (Baker *et al.*, 2019). However, while conservation scientists and practitioners from the Global North are gradually waking up to the fact that local knowledge and agency – including that of indigenous people – are essential for social justice and to achieving conservation outcomes, the road to decolonizing conservation science remains a long one (Baker *et al.*, 2019). As a discipline, conservation has a long colonial history and remains heavily dominated by institutions in the Global North when it comes to publications, funding and research networks (Maas *et al.*, 2021).

In a letter drawing attention to the need to decolonize conservation science, de Gracia (2021) focuses on how exercises that aim to set global conservation priorities are heavily biased in their representation towards researchers from the Global North. This despite the fact that many of today's most pressing conservation challenges are faced by countries and people in the Global South. To make this point, de Gracia identifies Jucker *et al.* (2018) as an example of research that perpetuates the power dynamics and priorities of researchers in the Global North. We thank de Gracia for voicing this issue and for giving us the opportunity to contribute to this important conversation. We strongly encourage others to read de Gracia (2021) and related perspectives, which provide much needed context on why we should strive for better representation in conservation science. Here we take this opportunity to reflect on some of the limitations of our own work, while also clarifying a few points made by de Gracia (2021) in reference to Jucker *et al.* (2018) and priority setting research more broadly.

Broadening participation in priority setting research

de Gracia's (2021) central message is that certain groups – particularly those from the Global South and those outside traditional academic circles – rarely get a seat at the table when conservation priorities are set. We entirely agree. This disparity is captured clearly in a recent meta-analysis by Dey *et al.* (2020), who report that only around a third of priority setting exercises in ecology and conservation involve resource users, and almost none engage with indigenous organizations (although most do include participants from governmental and non-governmental organizations outside academia). It is easy to see why de Gracia chooses Jucker *et al.* (2018) as a specific example of this broader issue. This project was led by a group of conservation scientists

largely based at a single institution, the University of Cambridge, which in many ways epitomizes the power imbalance between different regions of the globe. Lack of broad institutional and societal representation is certainly a valid criticism of our work, and a limitation which we ourselves drew attention to in our paper. However, de Gracia's letter does overlook three important aspects of Jucker *et al*. (2018): (**i**) our goal was not to set new conservation priorities, but to develop a method to re-evaluate existing ones; (**ii**) the approach we developed actively sought to increase representation (albeit imperfectly); and (**iii**) despite our shared institutional affiliation, as authors we actually represented a diverse group of early career researchers (ECRs).

First, Jucker *et al*. (2018) was not a conventional priority setting exercise, as the paper did not aim to identify any new priority research areas. Instead, what motivated our work actually echoes several of de Gracia's general criticisms of current priority setting exercises. Recent years have seen priority setting research become increasingly popular in the environmental sciences (Dey *et al.*, 2020), with at least 35 such papers being published in the decade between 2006–16 (see Fig S12 in Jucker *et al*. 2018). However, continuously identifying new areas of priority research might not necessarily be the best way to advance conservation, particularly if no attempt is made to determine how the broader conservation community judges their relative importance. We therefore set out to develop a framework to revisit existing priority questions and identify key knowledge gaps that remained. We used the 100 questions posed in Sutherland *et al.* (2009) as our case study, as it was one of the first exercises of its kind explicitly focused on conservation. Using these as a reference, we asked two basic questions: (**i**) how much effort had gone into addressing each of the 100 questions over the past decade? and (**ii**) are these topics still perceived as highly relevant to achieving global conservation goals? We did this using a two-pronged approach: a literature review to estimate effort and an online survey to assess relevance (the latter of which is the focus of de Gracia's letter). We acknowledge that by choosing these specific 100 questions as our reference, we implicitly legitimize them, even if in our paper we were careful to highlight lack of broad representation as a major limitation of Sutherland *et al.* (2009). However, it is important to keep in mind that at its heart ours was a methodological exercise – a first attempt to develop a framework for re-evaluating existing priority topics across any field of research.

Second, by using an online survey to assess relevance, our approach aimed to address de Gracia's major criticism of priority setting exercises: lack of representation. Our survey reached 222 conservation scientists and practitioners, five times as many as those who originally contributed to Sutherland *et al*. (2009). This included respondents from the Global South (South America, Africa and Asia, excluding Japan), which, despite being a minority (17%), generally

tended to assign relevance scores that were broadly consistent with those of respondents from Europe, North America and Australia (Pearson's correlation coefficient = 0.47, P = 0.002 for questions with at least 5 respondents from both groups). This is not to say that our approach was perfect, nor that it went far enough in addressing the issue of representation. Beyond the obvious geographic biases in the survey which de Gracia (2021) focuses on, there are also less visible ones linked to age, gender, ethnicity, disability, socio-economic status and education which could have affected our results. These are important limitations of our work which we documented and discussed in our original paper. However, while acknowledging these limitations, our approach did at least take a first step towards broadening participations in priority setting exercises.

Third, while the authors of Jucker *et al*. (2018) were all based at the University of Cambridge and its Conservation Research Institute (UCCRI), we did not reflect the typical make-up of a priority setting group. For one, at the time this project was undertaken, all 45 authors were ECRs (PhDs, Postdocs or Research Fellows), not established experts in our respective fields. For practical purposes (including funding constraints) we needed to restrict participants to those based in Cambridge, hence the strong institutional bias. We were nonetheless conscious that the composition of the team was critical, as it strongly influences how collaborative and interdisciplinary research is perceived, theorized and implemented (Aijazi *et al.*, 2021). To encourage inclusivity and participation, diverse voices from academia and NGOs were consulted during the design phase of the project. This included ECRs from across disciplines in the natural and social sciences – Geography, Land Economy, Law, Plant Sciences and Zoology – who participated in this planning process. Collaboration in the project emerged from an open call to ECRs, irrespective of ethnicity, race, gender, or area of expertise. Of the 45 authors, ⅔ were women, and while certainly not a majority, several were from the Global South, including one of the two project leads. There are of course many factors beyond age, gender and ethnicity which determine who participates in priority setting research, and we cannot (and did not) claim to represent everyone with a stake in the conservation of the world's biodiversity. But we did make a concerted effort to broaden this group.

The future of priority setting research in conservation

Reflecting on the need to broaden participation when prioritizing conservation objectives, de Gracia (2021) ultimately comes to the conclusion that "*until this work is seriously undertaken, articles such as Jucker et al. are harmful and inappropriate*". A deeper debate is needed about how we tackle the issue of representation in conservation, and whether we should accept to make incremental progress while acknowledging limitations (as was the spirit of Jucker *et al*. 2018) or if a more radical

shift in practices needs to occur first. What we certainly agree with is that we can and should do more to narrow the representation gap. Thinking practically, one thing we can do is set clear authorship guidelines that ensure people from diverse backgrounds are given the opportunity to participate in and lead priority setting research. This is similar to the model that the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) follows when nominating contributing authors (although this too has been criticized for not going far enough; Báldi & Palotás, 2021). Language is another important barrier to participation which we can take concrete steps to remove (Amano *et al.*, 2016), although it is by no means the only one. For instance, subsequent work led by authors who contributed to Jucker *et al*. (2018) looked to canvass a broader group of people by translating their questionnaire into five languages (Rose *et al.*, 2018). Finally, it is important that we think of diversity and representation holistically. de Gracia (2021) puts a strong emphasis on the Global North-South divide. But diversity and inclusion are much more complex than just geography. Opportunities to contribute to decision making vary dramatically not just between the Global North and South, but also within them, due to factors such as age, gender, ethnicity, religion, access to education, disability and socio-economic status. In striving for greater geographic representation, we must not lose sight of this fact.

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