

Six actions for ecologists in times of planetary crisis

Nathalie Pettorelli¹, Kevin J. Gaston², Jos Barlow³, Miguel Araujo^{4,5}, Mercedes Maria da Cunha Bustamante⁶, Steven L. Chown⁷, Luisa Maria Diele-Viegas^{8,9}, William F. Laurance¹⁰, Alexander Lees¹¹, Felipe P.L. Melo^{12,13}, E.J. Milner-Gulland¹⁴, Gretta Pecl^{15,16}, Isabel Sousa-Pinto¹⁷

Climate breakdown and unprecedented biodiversity loss put humanity at grave risk, threatening human lives, livelihoods and well-being globally. Ecologists have been instrumental in unveiling and detailing some of the mechanisms driving biodiversity decline, regularly calling for immediate action¹. In response to this, a sense of emergency has entered public discourse, heightened with each new report and global summit; some ecological societies have been calling on their members to write to their political representatives, while many ecologists have been vocal about both scientific and societal issues on social media. Yet, despite these pockets of activity, it has been argued that the way the discipline of ecology operates could reflect more clearly the urgency of the situation^{2,3}.

Several factors may contribute to the current mismatch. First, like any other scientists, ecologists have been encouraged to place themselves in a neutral, reporting, objective role⁴. Those deviating from this tack have encountered increasing threats to their academic freedom and activities, especially with the rise of political populism and nationalism around the world⁵. Second, the emergence of Conservation Biology in the 1980s provided a clear home for mission-driven ecologists who aspire to go beyond applied science⁶. Third, the scientific community is embedded in societies and economic systems primarily hardwired to economic growth, where (i) facts alone do little to address systemic issues underlying biodiversity loss and climate change, and (ii) high-level decisions about research funding are increasingly shaped by their perceived contribution to economic growth^{2,7}.

While this disconnect between the systems studied and the urgency of the environmental crisis can be rationalised, a key question remains: if the ecological community is not fully expressing the urgency and developing responses, why should anyone else? This question demands a collective reflection on what individuals, employers, funders, publishers and learned societies could do better to accelerate the transition toward a future that safeguards the climate, biodiversity and ecological processes upon which humanity depends.

Here, we call on the ecological community to consider six actions that we believe could drive meaningful change:

Explicitly recognise and address the biodiversity crisis: Ecologists and their institutions need to embrace a culture that places efforts to stop and reverse biodiversity loss at its core. This commitment should be clearly articulated in mission statements, compelling ecologists to develop their own theory of change in terms of how their research helps address biodiversity loss and supports nature recovery. For us, this has meant prioritising some research avenues over others based on their conservation importance, and acquiring new knowledge and skills than the ones we were originally trained in.

Explore positive futures: Ecological research should be extended to explore what sustainable futures for nature would look like⁷. This requires engaging with other disciplines and society at large to identify plausible positive ecological futures and effective strategies that promote biosphere-based sustainability at multiple scales, while contributing to initiatives such as Biosphere Futures (<https://biospherefutures.net/>). Funders and learned societies should actively support the development of scenarios for positive change, helping steer both research and public discourse.

Defend academic freedom: As a group, we have witnessed our research, or the research of our colleagues, being miscommunicated, amended or suppressed. We therefore believe more robust mechanisms are needed to enable direct, unfiltered, communication between scientists and policy makers, ensuring that scientific messages are not diluted or misrepresented⁸. Additionally, institutions and publishers should urgently collaborate to (i) create avenues for scientists who cannot openly express their views to contribute meaningfully to public and policy discussions⁹ and (ii) identify and safeguard critical ecological data at risk of being erased in political turmoil.

Go political: Science has always been political, yet we are constantly being told that it suffers when scientists become politically engaged. There's never been a more important time for this neutrality myth to be put to rest. We believe that ecologists must critically assess, and engage with, the broader environmental impacts of their research and recognize how their research activities and conclusions reinforce or disrupt existing power structures¹⁰. The field would also benefit from greater engagement with social sciences, notably Political Ecology, which examine the economic, social, and political dynamics involved in systemic changes.

Inspire society: The impact of ecology as a discipline may be undermined if the actions of its representatives do not embody the changes they seek to promote. Role-modelling is a well-documented driver of behavioral shifts, and a practical means of testing approaches to reducing the environmental footprint of institutions, research and professional practices. At the individual level, this may mean refusing to fly to deliver a 1h talk; at the institutional level, this could be about reporting annually on your carbon and biodiversity footprints.

Address the colonial legacy of ecology: Western dominance of ecology has had detrimental effects on local science communities and epistemologies that directly impact our ability to tackle the biodiversity crisis. Resolving this requires the whole ecological community to (i) promote and engage with local and indigenous knowledge, and (iii) demand an egalitarian contribution and representation of scientists from diverse cultural and ethnic backgrounds. For some of us, this has meant arguing for specific monitoring and support systems for underrepresented geographic groups within editorial boards and learned societies; setting up and supporting communities of practice on the decolonisation of science in our home institutions; or monitoring the contribution of local knowledge in our scientific outputs.

The current global environmental crisis we face entails a stronger shift in how ecologists, and other researchers, position themselves in society, prioritize their research and make decisions about their ways of working. The ecological community is large – ecological societies are larger, older and run more journals than their conservation biology counterparts – yet it must be, as a whole, more proactive and vocal on one of the key issues of our times. With the object of study of its discipline under unprecedented threat, the ecological community needs not be found wanting in, and ought to be at the forefront of, the response.

Competing interests' statement: The authors declare no competing interests.

References

1. Fletcher, C. et al. *Glob. PNAS Nexus* **3**, 106 (2024).
2. Dupont, L. et al. *Nat. Ecol. Evol.* **9**, 23-33 (2025).
3. Arnillas, C.A. et al. *EcoEvoRxiv* <https://doi.org/10.32942/X2B90T> (2025).
4. Fuentes, A. *Science* **386** DOI: 10.1126/science.adt719 (2024).

5. Pettorelli, N. et al. *J. Appl. Ecol.* **56**, 1034-1039 (2019).
6. Meine, C. et al. *Conserv. Biol.* **20**, 631-651 (2006).
7. Costanza, B. *Addicted to Growth Societal Therapy for a Sustainable Wellbeing Future* (Routledge Explorations in Environmental Studies, 2022).
8. Driscoll, D.A. et al. *Conserv. Lett.* **14**, e12757 (2021).
9. Engert, J.E. *Conserv. Lett.* **15**, e12909 (2022).
10. Miller, J. et al. *Cons. Lett.* **16**, e12947 (2023).

List of author affiliations

¹Institute of Zoology, Zoological Society of London (ZSL), Regent's Park, NW1 4RY, United Kingdom

²Environment & Sustainability Institute, University of Exeter, Penryn, Cornwall TR10 9FE, United Kingdom

³Lancaster Environment Centre, Lancaster University, LA1 4YW, United Kingdom

⁴Department of Biogeography and Global Change, Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Científicas (CSIC), 28006, Madrid, Spain

⁵Rui Nabeiro' Biodiversity Chair, Mediterranean Institute for Agriculture, Environment and Development (MED), Global Change and Sustainability Institute (CHANGE), University of Évora, 7000-784, Évora, Portugal

⁶Department of Ecology, Institute of Biology, University of Brasília, Brasília, Brazil

⁷Securing Antarctica's Environmental Future, Monash University, Victoria 3800, Australia

⁸Department of Biology, University of Mississippi, 214 Shoemaker Hall, Oxford, MS, United States 38677

⁹(Bio)Diversity in the Anthropocene Lab, Federal University of Bahia, Salvador, Bahia, Brazil

¹⁰Centre for Tropical Environmental and Sustainability Science, and College of Science and Engineering, James Cook University, Cairns, Queensland 4878, Australia

¹¹Department of Natural Sciences, Manchester Metropolitan University, Manchester M1 5GD, UK

¹²School of Animal, Rural and Environmental Science, Nottingham Trent University, Nottingham NG1 4FQ, United Kingdom

¹³Instituto de Biociências, Universidade Federal de Pernambuco, Recife, Brasil, 50670-901

¹⁴Department of Biology, University of Oxford, Oxford, United Kingdom

¹⁵Institute for Marine and Antarctic Studies, University of Tasmania, Hobart, TAS, Australia

¹⁶Centre for Marine Socioecology, University of Tasmania, Hobart, TAS, Australia

¹⁷Ciimar and Department of Biology, Faculty of Sciences, University of Porto, Portugal