

## Scientific Life

Championing  
inclusive terminology  
in ecology and  
evolution

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**Amid a growing disciplinary commitment to inclusion in ecology and evolutionary biology (EEB), it is critical to consider how the use of scientific language can harm members of our research community. Here, we outline a path for identifying and revising harmful terminology to foster inclusion in EEB.**

### Toward a more inclusive future for EEB

In recent years, events such as the coronavirus disease 2019 (COVID-19) pandemic and waves of anti-Black violence have highlighted the need for leaders in EEB to adopt inclusive and equitable practices in research, collaboration, teaching, and mentoring [1–3]. As we plan for a more inclusive future, we must also grapple with the exclusionary history of EEB. Much of Western science is rooted in colonialism,

white supremacy, and patriarchy, and these power structures continue to permeate our scientific culture [1,4,5]. Here, we discuss one crucial way to address this history and make EEB more inclusive for marginalized communities: our choice of scientific terminology.

We provide background on how terminology influences inclusion in EEB, describe existing community-based initiatives and our new grassroots effort to champion inclusive language in EEB, and offer guiding questions and considerations for readers committed to using inclusive scientific terminology. This effort is particularly important for redressing the ongoing marginalization of many groups in EEB, including Black, Indigenous, and people of color (BIPOC) communities; lesbian, gay, bisexual, transgender, queer and/or questioning, intersex, and asexual (LGBTQIA+) communities; and disabled communities; among others. This work is motivated by the collective experiences, perspectives, and knowledges of our author group (Box 1). Mitigating the institutional problems in EEB will take significant effort and resources, and examining the role of language in these problems must go beyond attention to scientific terms. It must also include consideration of how language is used among scientists more broadly, and how English is often treated as the dominant language for scientific work. Nevertheless, we propose that inclusion can be fostered by a collective commitment to be more conscientious and intentional about the scientific terminology we use when teaching, mentoring, collaborating, and conducting research.

### Why is it important to consider terminology in EEB?

It is critical for ecologists and evolutionary biologists to continually reflect on the impacts of scientific terminology on research, mentoring, collaboration, and teaching, because the meanings of words can change over time and cause harm

[6]. Attention to language is particularly important because the terms we center in science can send value-laden messages about who belongs (or not) and what ideas matter (or not), even when we do not intend to do so.

One way that terminology can negatively impact EEB is by creating environments in which students and researchers experience microaggressions, which are incidents that can adversely affect individuals from marginalized groups by perpetuating stereotypes and discriminatory attitudes [7]. For example, one of our authors trained in the USA recalls ‘how tired I was as an undergrad hearing how invasive species from other countries decimate pristine US ecosystems. It reminds me of when people tell me or other people of color to “go back to where we came from”. Why would I want to be in a field that exoticizes immigrants or reinforces narratives that immigrants are a plague?’ Similarly, herpetologist Dr Earyn McGee describes how removing terminology that references historical racial violence against Black people can help create disciplinary environments that feel less exclusionary [8].

Scientific terms used in EEB can also reinforce oppressive systems, discriminatory tropes, and offensive terms. For example, anti-trans language has been used to describe male snakes that engage in female mimicry, and phrases such as ‘sneaky mating strategy’ can normalize problematic male sexual behavior [6]. Disciplinary terminology can also be encoded with violence even when a member of the EEB community does not experience it. Some species names and prestigious awards memorialize historical figures who led or participated in scientific racism and genocide [1,8]. This kind of commemoration is particularly troubling when we remember how scientists from marginalized groups are often systematically excluded and undervalued in EEB curriculum, citational practices, and research communities.

**Box 1. Author positionality statement**

The authors of this article recognize that we hold varying degrees of marginalization and privilege based on our social identities, professional roles, and educational training. Our diverse identities and positionalities influence the experiences we have as members of our disciplinary communities and inform how we conduct scholarship, including the writing of this piece. Our team of authors includes graduate students, staff, postdoctoral scholars, and assistant professors employed across historically white and minority-serving institutions in the USA and Canada, and several authors have personal ties to other countries. This group formed through interactions on Twitter, email invitations sent to EEB organizations, and connections from existing professional relationships concerning a shared interest in calling attention to the power of language and the ways it can cause harm. We recognize that our piece does not capture all perspectives or nuances about the impacts that scientific terminology and language can have in EEB. We also hold that language can create a sense of inclusion and safety, and hope that this piece sparks broader conversations about building inclusion in the sciences through critical considerations of scientific terminology.

We acknowledge that scientific terminology is only one aspect of language use that can perpetuate harm in EEB research, teaching, collaboration, and mentoring. For example, language use in the broader impacts section of grants can be improved to prevent the tokenization and subsequent commodification of marginalized groups or the creation of proposals that describe ‘vulnerable’ communities as broken and in need of help [9]. The use of English as the dominant vehicle for communicating science in publishing and public engagement also limits participation in, and recognition of, scientific contributions to EEB [1,10,11]. While we focus here on terminology, we encourage broader reflection and conversations about establishing inclusive norms for the language we use within our working environments.

**Existing efforts to change harmful language in EEB**

Removing harmful terminology at a disciplinary scale requires interventions at multiple levels and involvement from a diverse group of individuals and organizations. In recent years, several initiatives have formed to create this change, some of which focus on species names. As one way to reckon with the colonial history of EEB, Bird Names for Birds submits proposals to the North American Classification and Nomenclature Committee to change common bird names in the English language that pay homage to problematic historical figures<sup>1</sup>. At a professional society level, the

Entomological Society of America’s Better Common Names Project works to ‘identify and change common names of insects and related arthropods that are offensive, derogatory, exclusionary, and/or dehumanizing’ [12]. As one of their first projects, the Society’s task force led a community-engaged project to discontinue the use of a common name for *Lymantria dispar* that included a slur against the Romani people; the species is now called the ‘spongy moth’ in reference to the texture of its egg mass.

Words that promote xenophobia, which is prejudice against perceived foreigners, have also been tackled by multiple initiatives. One existing initiative, Just Language in Ecology Education, brings together scientists, educators, and artists to create curricula, blogs, and workshops around exclusionary terms that describe species, such as ‘invasive’ and ‘alien’<sup>ii</sup>. The group shares that use of such harmful terms can counter conservation education goals if audiences ‘have heard that same language used against themselves or their families’. The project curates resources that investigate these terms and advocate alternatives to them, such as adopting terminology that describes species not in terms of their geographical origins, but instead in terms of their negative effects within particular environments. Relatedly, the academic research community is also discussing the implications of using the term ‘citizen science’, a practice whereby members of the public collect or process data, because

‘citizen’ can frame science in terms of national belonging [13]. While ‘community science’ has been adopted by some as a replacement, others have noted that this replacement co-opts an existing term, highlighting potential unintended consequences of language revision and the importance of engaged and reflective processes [13]. These examples teach an important lesson: community-centered work provides critical insight and momentum for long-lasting, disciplinary reflection about scientific language that is too often considered neutral, normal, or fixed.

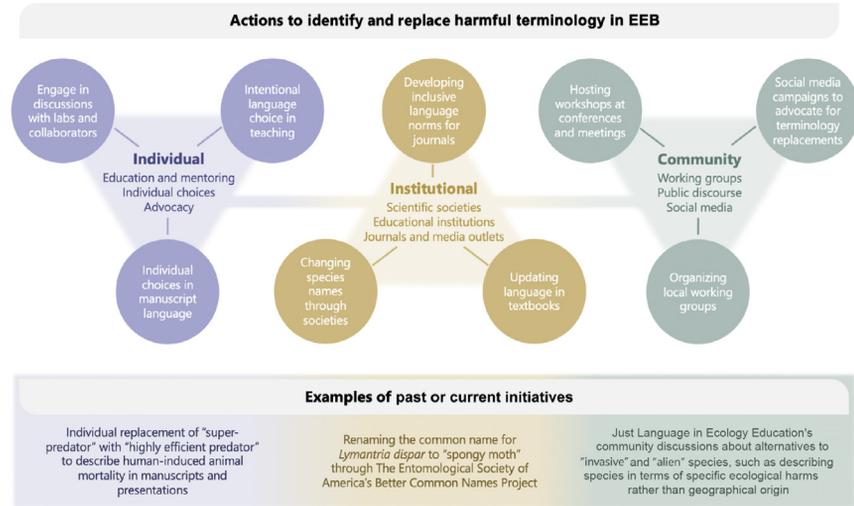
**A call for collective conversation and action**

To create change, the entire EEB community must identify the complex ways in which its language can be exclusionary, and embrace new strategies for adopting more inclusive language and creating a more just discipline. This kind of collective action has been called ‘communal justicing’, which is the process of iteratively and collectively revising a discipline’s ‘codes, conditions, and conventions that guide practice and shape how knowledge in the field is created, curated, and circulated’ [14]. This work needs to be done communally, not only to create large-scale change, but also for individual ecologists and evolutionary biologists to find community with others who hold inclusion and justice as disciplinary priorities. By collectively revising disciplinary terminology, we honor the voices of those who have been, and continue to be, harmed by the field of EEB. Ultimately, we anticipate that revising our terminology to be more inclusive will also improve EEB research by encouraging scientists to use terms that improve clarity and comprehension.

We recognize that revising harmful terminology will be challenging. Many of these terms are deeply embedded in the foundational literature, theory, and textbooks of EEB, and cannot be replaced overnight.

Furthermore, identifying which terms are harmful is not always a straightforward process, because the meaning of language changes across cultures, contexts, and time. The impacts of a given definition or association can also vary depending on a person's cultural background, experiences, or identity. Thus, the impact of language will not be the same for everyone and may not align with a user's intention. As our community comes together in this work, we encourage approaching the review and revision of terminology as an opportunity for championing equity rather than a process of punishing past practices. To support the reader in developing a practice of thinking critically about scientific terminology, we provide a series of guiding questions in **Box 2** related to history, context, community, interdisciplinarity, and implementation. Reflecting on these questions can then inform action at the individual, institutional, and community levels (**Figure 1**).

To unite those of us working to revise harmful terminology in EEB, we introduce our grassroots collective initiative called The EEB Language Project. The mission of our project is to create a platform for compiling resources and bringing together scientists to understand the impact that language can have on inclusion in EEB,



**Figure 1.** Actions to identify and replace harmful terminology in ecology and evolutionary biology (EEB). Actions to identify and replace harmful terminology in EEB with more inclusive alternatives can, and must, occur across individuals, institutions, and communities in scientific and public spheres. Here, we highlight potential actions that members of the EEB community can initiate and advocate for, and examples of actions that have already been taken at these different levels. The EEB Language Project (<https://eeblanguageproject.com>) seeks to support actions by individuals, institutions, and communities by providing guidance around actions and coordinating grassroots efforts.

and to identify terms that may warrant replacement or additional context for their use. Our initiative complements existing efforts by uniting individuals across sub-disciplines in EEB. To support the EEB community in this work, our website<sup>iii</sup> aims to provide researchers with additional resources, opportunities to participate in crowdsourcing and discussions,

and ways to find others interested in working on projects that change language use in EEB. This kind of collective action matters because '[w]hen ideology is deconstructed and injury is named, subordinated victims find their voices. They discover they are not alone in their subordination. They are empowered. This empowerment, this helping others to find their voices as we find our own, is the most important part of our work' [15]. We hope that you will join us in the important work of communal justicing in and for EEB.

**Box 2. Questions to ask when (re)considering scientific terminology in EEB**

We recommend that individuals critically assess the disciplinary terminology of their subfield. Below are some guiding questions:

- **History.** What is the etymology/origin of a term? Does its origin celebrate dominant narratives or oppressive norms? Does it commemorate violence or perpetuate prejudicial stereotypes?
- **Context.** How might members of marginalized communities have different or negative experiences with a term, irrespective of the intentions of those using the term? How can EEB learn from, and center, those experiences in conversations about disciplinary terminology?
- **Community.** Who has participated in conversations about the impact of a term, or about recommendations for more inclusive alternative terminology? Do such conversations center those most marginalized by that term?
- **Interdisciplinarity.** How has a term been discussed in the critical humanities and social sciences? What new insights about terminology (and its histories, meanings, and impacts) do science and technology studies, the environmental humanities, or the rhetoric of science add to EEB?
- **Implementation.** If a term has harmful associations, what alternative term(s) might more inclusively convey the same scientific concept? How can more inclusive alternatives be integrated into research, teaching, and mentoring?

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**Declaration of interests**

No interests are declared.

**Resources**

- <sup>i</sup><https://birdnamesforbirds.wordpress.com/>
- <sup>ii</sup><https://justlanguage.org/>
- <sup>iii</sup><https://eeblanguageproject.com>

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