Eponyms have no place in 21st century biological nomenclature

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We argue that naming species in honour of a specific person is unjustifiable and out of step with equality and representation. Reforming taxonomy to remove eponyms will not be easy but could bring multiple benefits for both conservation and society.

Main Text

"Science" is often lauded as the pursuit of objectivity; a field meant to stand separate from value or emotion. Yet, socio-political influences are infused into the ontology of science itself. In biology, historical (and contemporary) figures have often been honoured/celebrated by having a species or genus named after them [1,2]. Species scientific names based on real or fictional people are known as eponyms. These provide a fascinating record of the political and cultural milieu of natural historians and taxonomists since the time of Linnaeus. Eponyms typically reflect

benefactors, dignitaries, officials, the author's family members and colleagues or well-known cultural figures (Figure 1); a practice that persists today. From a contemporary perspective this is potentially problematic as many of those honoured are strongly associated with the social ills and negative legacy of imperialism, racism and slavery[3,4]. Moreover, 19th and early 20th century taxonomy was largely dominated by white men who, by and large, honoured other men (e.g., funders, colleagues, collectors, etc.) of their own nationality, ethnicity, race and social status. For example, a recent study documented that over 60% of the eponyms given to the flora of New Caledonia honoured French citizens and 94% of eponyms were named after a man[2].

The problematic nature of many eponyms reflects a much wider public discourse, with passionate debates about if, and how, we should honour historical figures whose values, actions and/or beliefs are now incompatible with contemporary culture. In South Africa, for instance, the highly visible and enduring legacy of the British imperialist, Cecil John Rhodes (who also has species named after him[4]), became the focus of a powerful social movement known as "Rhodes Must Fall". This movement ignited activists across multiple academic South African institutions to remove emblems and effigies of Rhodes and other contentious figures associated with a legacy of colonialism, racism, and other forms of oppression[5]. It also inspired activists in the UK[6] and US universities to follow suit, and to expand their protests to include historical figures associated with social ills such as slave ownership (e.g., Isaac Royall) and racial segregation (e.g., Woodrow Wilson)[7]. More broadly, the last decade has seen the rise of numerous movements, both local and national, that seek to remove contentious memorials altogether[8].

The need to reform taxonomic nomenclature

Attributing eponyms to species extends beyond the act of naming; it attaches the societal value system these individuals belong to. It stakes claim as to which knowledge system provides legitimacy to the existence of the species, while simultaneously diminishing the value/knowledge of the species within the context of those who may have interacted with it the most[9]. Inspired by the "Rhodes Must Fall" movement, Smith and Figueiredo[4] recently proposed that the botanical community should "proactively find solutions to address how to deal with such names and epithets". Their suggestion was not universally welcomed, with critics arguing that it is not the role of science to engage in politically motivated censorship or the "cleansing" of scientific history[10] and that name stability should be a paramount concern in taxonomy[11]. Furthermore, it is argued that revising names of biological species, which is strongly regulated, and other comprehensive changes would be overly disruptive, requiring an overhaul of the current rules and regulations regarding nomenclature[10,11].

In our opinion, these arguments against reforming biological nomenclature do not stand up to scrutiny. To begin with, the naming of species to celebrate and honour people is unambiguously a political act, whether the desire was to impress a colleague, funder or important dignitary, or to celebrate a family member, friend or collector of the specimen. Given that the scientists describing newly documented species in the 19th and early 20th centuries were predominantly of colonizing European nations[12], those commemorated were almost universally white male, upper-class Europeans. Secondly, name revisions would not alter scientific history, since the historical name would remain as a synonym and the identity of the individuals who initially described the species would remain unaltered. This is an important point, since eponyms can provide fascinating insights

into the history of biological exploration[13]. Third, many biological naming conventions already include recommendations against naming proposals considered offensive. However, a name considered innocuous by some may be perceived as offensive by others, and names that were once considered inoffensive are not necessarily viewed in the same way in a post-colonial world (see Figure 2 showing the proportion of eponym species in Africa honouring citizens from colonizing nations).

Finally, the technical and administrative barriers to changing a large number of species names, though extremely challenging, should not be considered sufficient reasoning against such a course of action. There are already high profile calls to reform the global governance of taxonomy prompted by the enormous levels of recent taxonomic change[14] and revision of eponyms adds to this argument.

Any call for exceptional changes in how we name nature requires an exceptional rationale. In this respect, it is important to highlight that taxonomy provides the backbone for the study and conservation of biodiversity[15]. There is already a common perception in many post-colonial nations that ecology and biodiversity conservation are western constructs, shaped by and for Europeans that privileges Western perspectives over others[12]. This perception is undoubtedly reinforced in many countries of the Global South by the existence of numerous species, some of which may be endemic or have local cultural value, that are named in honour of colonizers or people from the colonial descent. In Africa alone, 1,565 species of birds, reptiles, amphibians and mammals, which represent a quarter of vertebrate endemics, are eponyms[16–19]. Researchers from former colonies might feel justifiably uncomfortable, resentful or even angry at the constant reminders of imperial and/or political regimes reflected in the names of native and endemic species (see Figure 2).

Ongoing shifts in cultural values mean that future generations may interpret the political and personal attitudes of those commemorated as untenable. It is by no means unusual for citizens that were once widely respected to be negatively reappraised by history. Many scientists might have serious reservations about naming new species in honour of contemporary political figures (e.g., *Dermophis donaldtrumpi* – a caecilian named after Donald Trump by the Rainforest Trust to draw attention to his policies on climate change). A striking example of the dangers of overtly politicizing biological names is *Anophthalmus hitleri*, a cave beetle named after Adolf Hitler in 1933 that is currently threatened due to high demand from collectors of Nazi memorabilia[20]. Nevertheless, the beetle has not been renamed by the International Commission on Zoological Nomenclature because the name is not deemed sufficiently offensive[21].

In short, we believe that naming species in honour of real people is unnecessary and objectively difficult to justify. The Earth's biodiversity is part of a global heritage, which should not be trivialized by association with any single human individual, whatever their perceived worth.

Dealing with eponyms

The cultural trend towards greater and more equitable representation in all aspects of human endeavour is unlikely to reverse, meaning that many eponyms will remain problematic until action is taken. In light of progressive strides towards more equitable and diverse representation in all aspects of society including in science[12], our opinion is that the eponym issue in taxonomy must be urgently addressed.

An obvious action would be to alter nomenclature codes to preclude newly identified species being named after people. However, even this simple action would be difficult to implement in practice. Naming biological organisms is highly formalized and constrained, with strict rules and guidelines. Taxonomy is primarily governed by two branches of the International Union of Biological Sciences (IUBS): the International Commission on Zoological Nomenclature (ICZN) and the International Association for Plant Taxonomy (IAPT). Without a strong consensus among taxonomists, some of whom have liberally created new eponyms, such a proposal is unlikely to be implemented. An alternative to amending the codes is to more strictly interpret existing provisions, namely Article 25 of the ICZN code that instructs authors to ensure new names are "chosen with their subsequent users in mind and that, as far as possible, …do not cause offence"[22]. A stricter interpretation of this article could severely limit or even eliminate the creation of new eponyms without a need to rewrite the code.

In the long term, as argued above, removing all valid eponyms from biological nomenclature is the most ethical option, but is probably unfeasible without a large scale overhaul of taxonomic procedures. For example, one of the key principles of both codes is that the first name validly given to a species is its correct name, known as the Principle of Priority – this was the main reason for rejecting a proposal to change the name of *Anophthalmus hitleri*. More generally, there is very strong resistance among the taxonomic community to alterations of the codes to allow renaming of species on ethical grounds[11]. We believe such resistance to be short-sighted: if taxonomy is to be rebranded to the scientific community as a 'modern, active and important discipline'[23], it needs to be both objective while also striving to respond to changes in cultural norms.

If these technical, administrative and epistemological barriers could be overcome, the task of renaming eponyms could be given to taxonomists from the biogeographic region of the candidate species. Such a strategy would ensure greater inclusivity and could be positive for taxonomy and conservation, integrating both a symbolic distancing from imperialist roots and reinvigorating local and national interests in biodiversity and its cultural value[9]. It may also have the added advantage of promoting interest in taxonomy and associated funding in the Global South where new taxonomists are most needed[24]. Renaming eponyms would also be an important gesture reinforcing the universality of Earth's biological heritage and our obligation to protect it.

Given the vast number of eponyms, such an exercise would have technical and administrative costs (especially for low/middle income countries) and has the potential to sow confusion among the many users of taxonomy[11]. Nevertheless, there are two reasons why widespread changes in nomenclature may be less problematic than feared. First, rapid advances are being made in the development of universal species checklists that are interoperable with biodiversity information systems[25]. Such checklists should reduce the inevitable confusion and uncertainty generated by revising species' names. Second, most conservationists, ecologists and biogeographers are already well accustomed to managing synonyms (a scientific name for a taxon that is different from its valid scientific name), and the publicity associated with a widespread change in taxonomy would mean that most professionals would be aware of the issue. Although the general public is far less likely to use scientific names, eponyms are often incorporated into vernacular language – e.g., "Hitler's beetle" and "Taylor Swift's millipede". Renaming eponyms to better connect with local geography and culture[9] could provide wonderful opportunities to highlight the importance of biodiversity conservation and to reinforce the deep links between nature and society.

In conclusion, we believe that naming a biological species after a human was (and is) never right, regardless of good intentions. Halting the practice of creating new eponyms and renaming currently valid eponyms would, in the long run, be good for taxonomy and for conservation.

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Acknowledgments

Partial support for PG, FAM, JMA, and RJL came via the European Union's Horizon 2020 research and innovation programme under grant agreement No 854248. AMCS was supported by a "Ramón y Cajal" Fellowship (RYC2020-029407-I) of the Spanish Ministerio de Ciencia e Innovación.

Ethics declarations

The authors declare no competing interests.

Data and materials availability

All data are available in the main text or the supplementary materials.

Fig. 1. Number of eponym species (i.e., names of species referencing people) in relation to the commemorated person's profession and/or relation (in the case of family) to the describing author. Y-axis refers to the commemorated person's nationality. Data refers to mammals[16], reptiles[18], amphibians[17] and birds[15] in Africa.

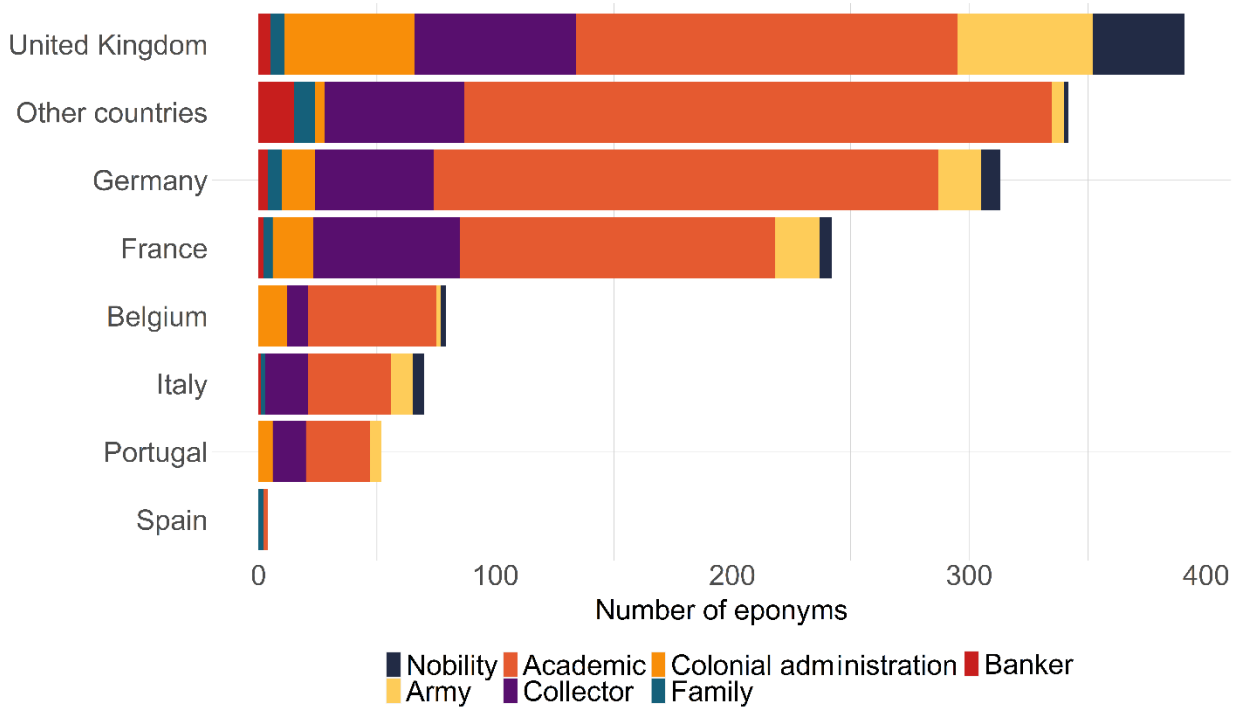

Fig. 2. Proportion of eponym species (i.e., names of species referencing people) in relation to total number of species for land vertebrate taxa (amphibians, birds, mammals and reptiles) by African country. Pie charts represent the national origin ratio of eponyms for selected countries. Country colours correspond to historical imperial claims in Africa at the end of the 19th century. Country borders represent present day borders.