Science versus vernacular: should some taxa of animals and plants be renamed according to ‘indigenous’ practices?

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Abstract

A recent publication recommended that so-called ‘indigenous’ names should be given priority over conventional binominals when assigning nomina to taxa. Explicit political and sociological reasons were given why such a practice should be considered. Apart from the fact that taxonomy should not be used as an agent for cultural change, a system that has been in unquestioned use for over 250 years has clearly unambiguity, utility, precision and standardisation in its favour, and is also supported and defined by carefully considered rules. In this rebuttal, reasons are given for the value and continuance of the current nomenclatural system and it is argued that the concept of indigeneity as applied to humans is not only questionable, but imprecise. Difficulties with deciding priority within a melange of languages and dialects overlain by diasporic movements, as well as the narrow range of available terms for biota in native languages, adds to the inutility of the system that is being argued against here, and which we reject utterly.

Key words

Indigenous, names, priority, taxonomy, taxa, nomina, binominal, nomenclature, science, culture, history, politics.

1. Introduction

Originally this paper was submitted as a letter (in ‘Matters arising’) to Communications Biology criticising the proposal put forward by Gillman & Wright (2020) which suggested that more use should be made of ‘indigenous’ names in taxonomy, and in fact that such names should be accorded ‘priority’. After mostly complying with reviewers’ and editorial suggestions, the re-submitted letter was rejected on the puzzling grounds that it “does not contribute a sufficiently productive discussion or indicate steps towards balanced implementation of Gillman & Wright’s suggestion”. It was not our intention to support or assist in the implementation of what we saw as a flawed proposal, as we do
not think that taxonomy should be imprecise, politicised or used to further a sociological or political agenda. Our aim was to open a debate about Gillman & Wright’s (2020) proposal. In our view, the stifling of opinions, no matter how discordant or irritating, can hamper scientific progress. We give a further revised opinion below after having our comments perused by 8 referees and 2 editors, with a total of 7 in support of our arguments and 3 against or with mixed feelings, while an additional 5 others neglected to respond to an invitation to comment.

2. Restoring ‘indigenous’ names in taxonomy

Gillman & Wright (2020) proposed that taxonomists should overrule the longstanding Principle of Priority in animal and plant nomenclature and change established scientific species names into pre-existing ‘indigenous names’, whenever possible. They asked for: “…a new respect for indigenous precedence in nomenclature” (Gillman & Wright 2020). Below, we clarify our position with respect to the correct use of the adjective ‘indigenous’, following Onions (1973) and Lincoln et al. (1998), and retain the quotation marks because of our objection to what we see as its incorrect use.

Principally, Gillman & Wright (2020) posited that there is no difference in nature between vernacular (common, local or trivial) names of animals and plants, and scientific names (nomina), but we strongly disagree. The former designate merely ‘kinds of animals and plants’ whereas the latter designate taxa, i.e., scientific concepts. Vernacular names may in some cases correspond to the same units as the taxa recognised by taxonomists, i.e., they may accommodate the same organisms, but even when it is the case this is not based on the same approach. Vernacular names are often given to animals and plants according to the practical needs of humans, their usefulness to them or the threats they may cause to them, their crops and domesticated animals, or for mythical or religious purposes. They are also useful labels for identifying or recognising familiar natural objects encountered during daily activities, but not in any way based on attempts to understand the relationships between organisms or their evolution. For these reasons, in some cases, different names may be given to different members of the same biological species, such as the males and the females, the young and the adults, different ontogenetic stages, different physiological conditions (e.g., during the breeding season), or individuals having different colours or sizes. In contrast, the same name may be given to different species, often many of them, and not only in the case of ‘cryptic’ species. In fact, the less useful or harmful (or visible) organisms are to humans, the less likely they will be designated by vernacular names and are more likely to be overlooked and given no cognomen at all. Such a practice could never hope to meet the precision and unambiguity offered by modern taxonomic procedures (Dubois et al. 2021). In considering that vernacular names and taxonomic nomina designate the same entities, the paper by Gillman & Wright (2020) does not deal with biological science, but with anthropology.

3. Science undermined

By considering that ‘indigenous’ peoples had already ‘named’ (as ‘pre-existing indigenous names’ or ‘long-standing indigenous names’) the entities that are now recognised by science, Gillman & Wright (2020) in fact underrated or even denied the scientific discipline of biological taxonomy. They also overlooked the point made earlier that only a very small proportion of the biota in any territory occupied by native peoples will be given identifying names. They supported an unsystematic and purely descriptive approach to the natural world, with no analytical component. The view of Gillman
& Wright (2020) that these traditional cultures had already provided an acceptable nomenclature for organisms through empirical, mythical or religious approaches, amounts to saying that there was no need to develop a whole body of concepts and methods to classify and name the units of biodiversity. In fact, their proposal is not limited to a criticism of the current Codes of nomenclature, but is a frontal attack on the scientific discipline of biological taxonomy and should be rejected as such.

4. Rules of nomenclature

Although the idea of employing names with cultural relevance to aboriginal (see Onions 1973) inhabitants of each country would at first appear to be a nice paternalistic gesture, such practice will provide problems in identifying animals and plants at an international level. Binominal nomenclature follows a set of rules especially aimed at the stability of scientific names, established by the International Code of Zoological Nomenclature (Anonymous 1999) and by the International Code of Nomenclature for Algae, Fungi, and Plants (Turland et al. 2018). Nearly all taxonomists adhere to these Codes as they are informally known (although alternative systems or proposals exist; e.g., the Phylocode), and the overall effect is an almost universal understanding of how names are applied.

The binominal nomen of an organism is formed by the generic and specific epithets, traditionally derived from classical Greek and Latin, used in the roots of many English words (Fischer 1999, Dubois 2011). Over the last five decades however, it has been our experience that an increasing proportion of both genus and species names have been formed from other languages, including Maori and Australian aboriginal languages (see examples given by Gillman & Wright 2020 and Galbreath 2021). Nevertheless, because we understand that classical Greek and Latin do not nowadays belong to any one culture, we assume they have a universal acceptance that transcends any consideration of ownership of a particular modern language or nomenclature. Localised usage and meaning in ‘indigenous’ languages where they might be applied to taxon binomina would mean lack of comprehension for users outside of the countries involved, and so goes counter to the universality, utility and explanatory power of science.

Thus, Gillman & Wright (2020) showed that they have no idea of what the concept of ‘nomenclatural availability’ of nomina is. A number of technical aspects of zoological nomenclature have to be mastered (through publication and respect for a set of prescriptions). Just because a name merely ‘exists’, whether published or not (e.g., being used in an oral culture) does not make it usable for taxonomic purposes. Even published nomina may be unavailable in biological nomenclature for failing to have followed these prescriptions: thus, the so-called nomina nuda, names used without description or illustration. Vernacular names do not meet the requirements of the Codes for availability. The same applies to the concept of taxonomic allocation of nomina, which under the zoological and botanical Codes is made through name-bearing specimens (so-called ‘types’), and to that of their validity among competing synonyms or homonyms (which is done through priority of publication in most cases, but also through other rules in some particular situations). Priority of publication is a very fair, undisputable and universal concept, which is basic for the smooth functioning of all Codes, and its replacement by a competing system (not only vernacular naming, but also so-called ‘usage’, which can be only loosely defined) would be most detrimental to taxonomic science (see Dubois 2010). ‘Types’ are specimens stored and available for later examination by scientists, a situation that is unlikely to be part of any ‘indigenous’ name allocation, because no reference specimen would be available for comparative study.
5. Principle of priority

For various reasons, many species have been given several names by different authors at different times, creating a synonymy which reflects the history of a taxon’s name. Therefore, to avoid confusion, the Principle of Priority was instituted so that a single species nomen, the earliest published since 1758, is used and recognised worldwide to distinguish the named taxon from all other species taxa members of the same genus, despite the hundreds of languages that humanity speaks. Should further research show that another scientific name has publication date priority over that nomen, clarification and renaming would be required.

To declare the Principle of Priority void and to give weight to ‘indigenous’/aboriginal names over others published much earlier (Gillman & Wright 2020), and assigned to the original authority (describer) is impractical; it would be divisive and confusing, creating disruption in the nomenclatural system because of two main reasons:

[5.1] The unique priority name given to a taxon by formal publication after 1758 is understood and recognised by all people, regardless of culture and language. This is of paramount importance when such a taxon has a wide geographic distribution, either naturally or due to human activity. In the latter case, the correct identification of a pest species or a disease vector is critical to its control.

[5.2] Even if local ‘indigenous’ names could replace existing priority nomina, it would be a great dilemma which of the many ‘indigenous’ names to choose. This, to our minds, is one of the biggest problems posed by Gillman & Wright’s (2020) suggestion. For example, the large flightless Australian bird commonly called ‘emu’, *Dromaius novaehollandiae* (Latham, 1790), has over 28 aboriginal names according to the region of the country (Anonymous 2020). Similar patterns are found within Polynesian and English names for birds, for example (Gill et al. 2000).

Another problem that arises is that native peoples often have no name at all for cryptic species (e.g., Heath & Palma 2017), having, obviously, never seen or named them, or they confer a blanket name to a number of similar but different organisms, which has no value as a unique epithet (Gill et al. 2010, Anonymous 2020). In support of their proposal, Gillman & Wright (2020) also made the point that certain modern taxon names ‘reflect outdated thinking’. In response, one has to ask: just how outdated are ‘indigenous’ names originally conferred on organisms in times dating from, for example, the Neolithic era?

6. Communication value of nomenclature

Biological nomenclature is a domain at the interface between science and society. It allows unambiguous communication about the scientific units comprising the biological classification of animals, both among and between scientists, and society as a whole. For this to work efficiently and universally, elaborate and precise rules are needed, formalised in the Codes of nomenclature. These Codes provide rules concerning the availability of nomina, their allocation to taxa (the latter being defined by the scientific discipline of taxonomy) and their validity (Dubois 2005). Nothing of this kind exists for vernacular names, and introducing the latter into the organised scientific body of scientific nomina would be destructive. It would open the door to the possibility to challenge millions of valid nomina, established as such through careful application of these, admittedly, quite complex rules. It would be a major threat to communication about organisms, especially now, when there is a biodiversity crisis, with the risk of extinction of unknown (but presumably large) numbers of species. This looming problem requires clear, unambiguous and universally accepted nomenclatural rules to deal with it.
7. Are vernacular names valid?

We are not suggesting that vernacular (common or trivial) names should not be used. At the level of mass communication, it is important that the public at large is brought into discussions on the biota and made aware in general terms of diversity and evolutionary concepts through non-scientific literature. In the past and currently, vernacular names have been borrowed by taxonomists to name species or genera in the frame of scientific nomenclature. Nevertheless, the distinction is such that in no way should the scientific epithet or genus nomen using the same spelling (or pronunciation) as a vernacular name be considered identical with it. They belong in different realms. They are not synonyms or homonyms, and priority does not apply across them, as the nomenclatural concepts of homonymy, synonymy and priority apply only within scientific nomenclature. In scientific nomenclature, they would be nomina nuda, an unscientific encumbrance, without use or validity.

If Gillman & Wright (2020) are serious about ensuring an ‘indigenous’ contribution to science, then they could promote, among such communities, a ‘citizen science’ approach, provide funding and support to encourage a survey and collection of organisms in a locality, agree on a discrete name for each, and establish understanding of their basic biology and ecology, and maintain a ‘type’ collection. In this way a framework for a systematic evaluation of the biota would be established and eventually perhaps, contributions could be made to mainstream science, especially from areas where little is known of the local flora and fauna.

8. What does ‘indigenous’ mean?

We wish to explain our opposition to the use of the term ‘indigenous’ promoted by Gillman & Wright (2020). It is a descriptor used very commonly around the world today to refer to any human groups that populated an area first, preceding the incursion of any subsequent human groups. In keeping with the precision that taxonomy requires (correct use of terminology and unambiguous language of science), the term ‘indigenous’ as applied to human groups these days is not used in its correct biological sense, i.e., for a people (or any organism) that originated, in an evolutionary sense, de novo in a particular region or country (Onions 1973, Lincoln et al. 1998). Lincoln et al. (1998) defined ‘indigenous’ as: “native to a particular area: autochthonous: used of an organism or species occurring naturally in an environment or region”. For humans, the only truly indigenous peoples that are native in a biological sense are those that arose and naturally reside in Africa; all other human populations beyond Africa are functions and features of the human diaspora (Cavalli-Sforza & Cavalli-Sforza 1995) and would be better termed colonising, invasive, migrant or aboriginal.

9. Problems with terminological imprecision

Our argument in support of the correct use of ‘indigenous’ is highly relevant in the context of Gillman & Wright’s (2020) proposal, because priority would have to be established to ensure that the earliest use of a vernacular name is recognised without causing offence to a people who may feel they have a prior claim to occupation of area over others of similar origin (e.g., the Moriori of New Zealand). The term ‘indigenous’ as used by Gillman & Wright (2020) provides a problem in semantics as well as human biology. For instance, peoples now often self-identified and currently called ‘indigenous’, who occupy many parts of the planet, by virtue of migration and dispersal, may
well have displaced earlier groups (i.e., aboriginal) by conquest and colonisation (Cavalli-Sforza & Cavalli-Sforza 1995), so who has the rightful claim to indigeneity? Furthermore, the names used by the earlier inhabitants for elements of the biota could likely be subsumed by those coming later. This would lead to even further confusion under the system proposed by Gillman & Wright (2020) if one were to be true to the ‘first’ use of a name. Accusations of ‘cultural appropriation’ are often levelled at those who would adopt names without consultation with the ‘owners’, especially if there is a spiritual component to the name. Gillman & Wright (2020) did not consider these possibilities, but if they were to do so, they would need to do ethnographic research beforehand, and it is likely that protracted discussions would be required in order to reach a consensus as to an agreed epithet. This could mean that new taxa may never reach publication if conflicts are not resolved. To substantiate our views, we refer to Miller (1952) where examples of the multiplicity and limited applicability of names given in Maori for New Zealand Insecta and Arachnida are presented. A final selection from such a plethora of names would be arbitrary at best, inaccurate at worst, and unlikely to satisfy a majority of ‘owners’.

10. Taxonomy and politics

A perhaps less important, although nevertheless irritating aspect of Gillman & Wright’s (2020) arguments was their view that “An approach to nomenclature that might be described as ‘colonial’ was reflected in the earlier penchant for assigning surnames that were habitually erected to honour collectors, sponsors, colleagues or employers who were often distanced from the country in question.” Besides the obvious advantages of using a single internationally recognised name, commemorating a person (not the only criterion used: diagnostic characters and type localities are often employed) is perfectly legitimate for nomina. Those for whom patronymics are assigned have earned the honour (at least in the standing of those conferring the name) and such history and recognition should stand, no matter what political or other agendas are imposed by those who would have alternative views of history (see Murray 2019, Scruton 2019). By invoking colonialism, Gillman & Wright (2020) stray into political territory, and away from scientific argument into the realm of social change, in which taxonomy should have no part. Further, names designated as ‘indigenous’ could also be construed as arising from colonialism should they have been as a result of the displacement of the language and customs of a previously occupying people, an example of which is seen in New Zealand following confrontations between the Maori and the Moriori (King 2000).

There has never been a more urgent need to describe and name life on this planet in the face of human expansion and population growth, and we do not need the distraction of a novel, unsystematic, and potentially clumsy approach to taxonomy in the face of such exigency (Dubois 2010).

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