



Retroactive changes should be introduced in the *Code* only with great care: problems related to the spellings of nomina

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Abstract

Taxonomy is currently facing a major crisis and is likely to have strong difficulties to reduce significantly the taxonomic gap before the biodiversity crisis has wiped out a large proportion of the living species of the earth. In this context, taxonomists should pay great attention to the nomenclatural Rules, and care for them to help them in this urgent task, rather than diverting their time and energy to secondary or useless questions or debates. A major purpose of the *Code* is to promote nomenclatural stability in zoology. This requires stability in the Rules, or at least that a great care be taken, when establishing new Rules, to avoid that they can have unexpected deleterious consequences for stability. In particular, in most cases, it is crucial to deny retroactivity to the new Rules. Several examples of problems created in zoological nomenclature by introduction of changes in Articles dealing with the spellings of nomina are examined in detail. These Articles were modified, with retroactive value, in the 1985 edition (Art. 32, 33, 35 and 39) and in the 1999 edition (Art. 24) of the *Code*. It is shown that these changes, which have no clear “philosophical” or practical justifications and which result in no clear benefits, have in fact had negative impacts on nomenclatural practice. Their implementation requires heavy useless additional work from taxonomists and has negative results in nomenclatural stability that had clearly not been anticipated by the ICZN when promulgating them. In a few sets of nomina tested below, the changes in the 1985 edition resulted in spelling changes for 10.0 to 22.2 % of the nomina, and those in the 1999 edition for 21.7 to 33.3 % of the nomina, roughly a quarter of them on the whole (24.5 %). Among others that are less emblematic, a striking case is that of the fish generic nomen *Tetraodon*, widely used especially since the genome of a species of this genus has been sequenced, and which should be changed to *Tetrodon* because of the unwarranted introduction of the new Art. 24.2.4 into the *Code*. It is suggested that these changes should be cancelled, or at least denied retroactivity from the years of their promulgations. In order to make this discussion easier, a “taxonomy” of the different kinds of spellings of nomina, and a dichotomic key to such situations, are provided. This stresses the fact that detailed discussions on very precise aspects of the functioning of nomenclatural Rules, as well as the computerization of nomenclatural data for online databases, require to use a specialized technical terminology to designate the nomenclatural concepts and tools, not vague “common language” terms like “name” or “type”: “*keep the Rules, but change the terms*”. The problems outlined here should be kept in mind by the ICZN before implementing drastic changes in the Rules of nomenclatural availability, as recently suggested.

Key words: Nomenclature, *Code*, availability, stability, terminology, nomen, spelling, *nomen novum*, First-Reviser, change in Rules, retroactivity, *Tetraodon*

Introduction

A new paradigm for biology has been created at the end of the last century by the combination of three facts: the taxonomic gap (Dubois 2010), the crisis of taxonomy and the biodiversity crisis (Dubois 2003). It requires a strong acceleration of the work of exploration, study, description and naming of the species of the globe (Wheeler *et al.* 2004; Dubois 2008*a,c,e*, 2010).

In order to be able to deal with the living organisms of our planet, we need to communicate unambiguously about them, and for this we need a specific and universal language. This is provided by scientific names or *nomina* (Dubois 2000) and nomenclatural Rules regulating the use of these nomina. As a result of a progressive work by the international community of taxonomists over two and a half centuries, a set of international Rules has been established and has been in force for more than one century in zoology (Melville 1995): the *International Code of Zoological Nomenclature* (Anonymous 1999; “the *Code*” hereafter). The International Commission of Zoological Nomenclature (ICZN) cares for the updating the *Code* and solving problems regularly occurring in this field.

As reminded in its *Preamble*, one of the stated purposes of the *Code* is “*to promote stability (...) in the scientific names of animals*”. In order to play this role, one of the basic requirements is that the Rules of the *Code* themselves be stable, as frequent changes in these Rules can only be a cause of nomenclatural instability. A major potential cause of problems in this respect is the introduction of *retroactive* changes in long established Rules. Such changes should be introduced only with great care, and taking into consideration their potential unexpected disturbing consequences. In order to avoid these problems, in most cases, changes in the basic Rules of the *Code* should only be implemented with a proactive, but not retroactive, value. Otherwise the risk is strong to result in unnecessary changes in the valid nomina of some taxa, or in their