



### **The rich but confusing terminology of biological nomenclature: a first step towards a comprehensive glossary**

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Biology deals with billions of living organisms, which display a great diversity but also share many characters, being the result of an evolution. Designating these organisms in a universal and unambiguous way is a basic need for communication, not only among taxonomists or even biologists, but with society as a whole. It is indispensable to have a unique system for distinguishing and naming the organisms that may be used for alimentary, agronomical, veterinary or medical purposes or for any other human needs, that may be responsible for diseases, pollutions, biotic invasions, that we may wish to protect, study or admire, etc. For all these purposes, we need a scientific discipline, taxonomy, dealing not only with the classification of living organisms into millions of classificatory units, the taxa, but also with the designation and indexation of these taxa (nomenclature). Biological nomenclature has to care for the scientific naming of millions of taxa (species and higher taxa like genera or families), the inventory of which is still very far from being finished.

This peculiar situation makes bionomenclature quite unique among sciences and even among all human activities. It has to solve a difficult dilemma (Dubois 2005, 2011). It must be unique, international and unambiguous, and it must maintain an important stability as long as taxonomy does not change. But it must also be flexible in order to be able to adapt to the frequent changes in the taxonomic paradigms and data. Changes in taxonomic paradigms have occurred several times in the last 250 years and are likely to occur again in the future. Changes in the data about organisms and their taxonomic interpretation are permanent. They result from the ongoing discovery of new organisms and species, of new characters and methods of study of organisms, and from the non-ending changes in the classification of species that unavoidably follow the progresses of our knowledge of the phylogenetic relationships and of all other aspects of the evolution of organisms.

All these constraints require to have detailed and sometimes quite complex nomenclatural Rules, formalized in international *Codes*. These *Codes* must allow biological nomenclature to be *robust*, i.e., to display both these contradictory qualifications of *stability* and *flexibility* (Dubois 2005). As a consequence, biological nomenclature cannot be “simple” and of immediate understanding. Mastering it is a specialized activity that requires to spend time understanding and learning how it works, and practising it in order to avoid the many possible mistakes in the practical implementation of the Rules.

An important dimension of biological nomenclature is its requirement to use a special language, with a rather high number of technical terms that designate special concepts and technical tools, several of which have no equivalent in other fields of human activity. Some of these terms, like *binomen*, *first-reviser* or *onomatopore*, were coined especially for the purpose of biological nomenclature, so it is clear to all readers that these are technical terms and that properly understanding their meaning requires special effort and