



## Phylogenetic hypotheses, taxa and nomina in zoology\*

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## Abstract

Taxonomic paradigms have changed several times during the history of taxonomy, yet a single nomenclatural system, so-called Linnaean, has remained in force all along. It is theory-free regarding taxonomy as it relies on ostensional allocation of nomina to taxa, rather than on intensional definitions of nomina (e.g., “phylogenetic definitions”). Nomina are not descriptions, definitions or theories but simple labels designating taxa. Both for theoretical and practical reasons, this system should be maintained for the allocation and validity of nomina under a cladistic taxonomic paradigm. Whereas taxa can be cladistically defined by *apognoses* or *cladognoses*, nomina should remain attached to taxa through onomatophores, combined in some cases with a Principle of Coordination. Under such a system, the allocation of nomina to taxa is automatic, unambiguous and universal, and nomenclature does not infringe upon taxonomic freedom. However, to avoid misunderstandings and to solve some current problems, the current *Code* of zoological nomenclature should be improved in several respects. The distinction should be made clear between *taxonomic categories*, which have biological definitions, and *nomenclatural ranks*, which do not, as they give only a position in a nomenclatural hierarchy: if used consistently under a cladistic paradigm, they simply allow to express hypotheses about successive branchings and sister-taxa relationships. Taxa referred to a given rank in different groups cannot therefore be considered equivalent by any biological criterion. The nomenclatural rules should cover the whole taxonomic hierarchy, which is currently not the case in zoology. The recent strong increase in the number of higher taxa which results from cladistic analyses may quickly lead to chaos and problems in communication if the nomina of these taxa continue to be based on personal tastes and opinions. There is an urgent need for the zoological *Code* to cover these nomina with automatic and stringent rules leaving no place to subjective interpretation. Just like for those currently covered by the *Code*, the status of these nomina should be established in their first publication (*nomenclatural founder effect*). The *Code* should be protected against alternative nomenclatural systems by rejecting as unavailable all nomina and nomenclatural acts published without respecting the basic Linnaean system of nomenclatural hierarchy of ranks.

**Key words:** Allocation of nomina to taxa, Apognoses, Cladistic hypotheses, Cladognoses, *Code*, Definitions of taxa, Diagnoses, Equivalence between taxa, Hypotheses, Linnaean nomenclatural hierarchy, Monosemy, Nomenclatural founder effect, Nomenclatural parsimony, Nomenclatural ranks, Nomenclature, Nomina, Onomatophores, Polysemy, Principle of Coordination, Redundancy, Taxa, Taxonomic categories, Taxonomy

## Printing conventions

In the text and tables below, species-series and genus-series nomina are printed, as usual, in lower case *italics*, whereas nomina of higher-ranked taxa are printed in small capitals, with the following distinction: family-series nomina are in *ITALICS*, whereas class-series nomina are in **BOLD**. In this paper, “the *Code*” designates the edition currently in force of the *International Code of Zoological Nomenclature* (Anonymous 1999) and “ICZN” the International Commission on Zoological Nomenclature.

## A preliminary statement

At the beginning of the “century of extinction” (Dubois 2003), the science of biology is facing a new paradigm, which results from the combination of two different facts: the taxonomic impediment and the biodiversity crisis. This statement is summarized in the following sentences: “In face of the biodiversity crisis, the need for urgency could be no greater. (...) The grand biological challenge of our age is to create a legacy of knowledge for a planet that is soon to be biologically decimated.” (Wheeler *et al.* 2004: 285). This well-known statement will not be discussed further here but these ideas will be kept in mind throughout the discussion below.