

**GROUP*: AN ADDITIONAL ARTIFACT FOR SEQUENCED
PHYLOGENETIC CLASSIFICATIONS**

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ABSTRACT

An additional artifact to denominate inclusive taxa of sequenced classifications is proposed for groups in which relationships between included groups are incompletely resolved. A monophyletic taxon with a polytomy at the immediate lower level can be referred to – without creating additional names – using the name of one of the stems at the polytomy at that level followed by a sign “*”. This artifact is useful to refer unambiguously to subgroups of taxa for which incomplete phylogenetic knowledge has been achieved, but which knowledge is considered sufficiently relevant to be published.

Subordination systems of classification seem to represent more precisely our knowledge about the order present in biological diversity. However, the structure of the Linnean System, together with the International Code of Zoological Nomenclature, generate requirements that make it nearly impossible to apply subordination to all levels, particularly to the family and genus groups. The very few traditional categories between family and species, and the limited number of endings (–idae, –inae, –ini, –ina, eventually with very few others) make it nearly impossible to construct subordinated classifications at these levels, as seems to recognize STEYSKAL (1987), even using FARRIS' (1976) suggestions. Art. 29 of the ICZN states that “A family-group name is formed by the addition, to the stem of the name of the type-genus, of –IDAE in the case of the family, and –INAE in the case of a subfamily”. Art. 35c states that “a family-group name is to be formed and treated in accordance with the relevant provisions of Art. 29”. Actually, a formal system of biological classification free from the Linnean structure (GRIFFITHS, 1976) is still to be developed.

Sequenced phylogenetic classifications have considerable limitations – same categories are given to different levels of the hierarchy, arbitrary decisions are always involved regarding at what levels subordination should be interposed, trichotomies cannot be immediately detected, etc. – , but they are probably still the best, if not the only way of making phylogenetic classifications of very large groups at or below the family level.

Some suggestions have already been made to solve some of the limitations of sequenced classifications (WILEY, 1981). I have earlier proposed (AMORIM, 1982a) an artifact to name the monophyletic inclusive groups of phylogenetic sequenced classifications, which solves the problem at least partially. The originally unnamed monophyletic group including subgroups B, C, D, E, and F of Fig. 1 can be simply referred

to as group-B⁺ in a phylogenetic sequenced classification. This artifact has been fundamental to work out a phylogenetic classification of the Scatopsidae (AMORIM, 1982b), where 11 intermediary levels are referred to between the family and the "most distant" genus of the cladogram (maintaining the traditional generic classification). It also has been used since then to solve similar problems by RAFAEL (1986), AMORIM (1987), CHRISTOFFERSEN (1988, 1990), ALMEIDA (1988), and TAVARES (1989).

However, there are situations in which, with this artifact, we are not able to refer unambiguously to unnamed inclusive monophyletic groups (Fig. 2). When the phylogenetic relationships between taxa at the immediately lower level of a group are unresolved (i.e., in cases of polytomies), it would not be advisable to use any of the names of the polytomy followed by "+" to refer to the whole group. My suggestion is that such a group could be provisionally referred to using the name of any of the stems at the polytomy, followed by the sign "*" (Fig. 3). Further resolutions of the cladogram may replace that name by one formally defined, if subordination is applied to that level, or, following sequenced classification, by another group* name, if still incompletely resolved, or by a group⁺ name, if completely resolved.

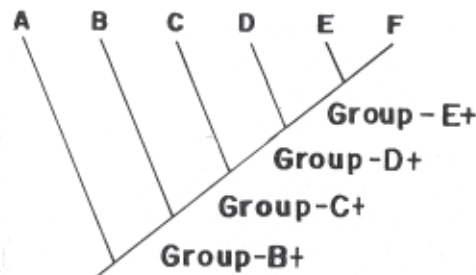


Figure 1 - A completely resolved cladogram of a group M, with subgroups A-F, for which a sequenced phylogenetic classification was made. The inclusive groups are named as indicated in intermediate levels.

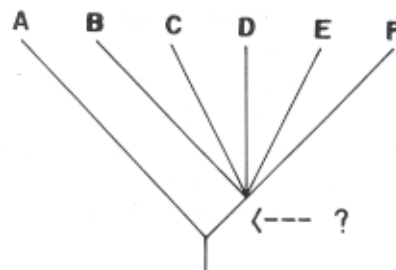


Figure 2 - A cladogram for the same group M of Fig. 1, with the relationships of the subgroups B + C + D + E + F not resolved. The "group⁺" artifact cannot be unambiguously applied to that level.

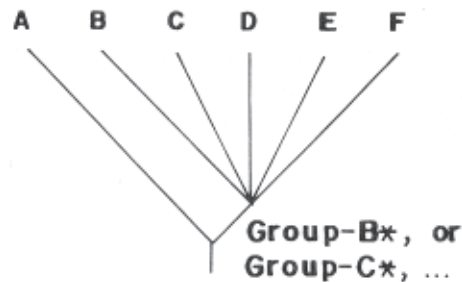


Figure 3 – The same cladogram of Fig. 2, in which the monophyletic taxon B + C + D + E + F is provisionally referred to using the "group*" artifact.

This may also be an important tool to deal with provisional classifications of groups at very high levels in the hierarchy (e.g., the relationships between kingdom or phyla) of which the relationships between subgroups are only partially resolved.

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