

THE CLASSIFICATION OF FOSSILS: PROBLEMS, PROPOSED  
SOLUTIONS, AND THE IMPORTANCE OF SOUND CLASSIFICATIONS

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Linnaean hierarchical phylogenetic classifications presuppose that the taxa classified are monophyletic in the strict sense (= holophyletic). This assumption may be generally valid when classifying solely extant organisms. Once extinct organisms (represented by fossils) are introduced into a classification, however, serious complications can arise. This is because the distinct theoretical possibility exists that some organisms (or groups of organisms) may be true ancestors of other organisms (or groups of organisms) and thus such ancestral groups would be nonmonophyletic. This problem can be dealt with in a number of ways: separate and parallel classifications may be erected for the organisms of different geologic periods; sequencing of taxa, along with traditional subordination, may be utilized; fossil taxa may not be ranked formally, but instead, using the concept of plesions, the fossil forms may be inserted into a preexisting classification of living organisms without otherwise altering the classification; or the categories incertae sedis and sedis mutabilis may be used to accommodate certain fossil organisms. None of these suggestions are totally satisfactory. In general the underlying philosophical bias appears to be that biological classification should be based primarily on living forms. An artificial distinction is made between fossil and living organisms: paleontology takes a back seat to neontology.

How do we classify fossils? How should we classify fossils? These are not merely academic questions. How fossils are classified directly affects the outcome of many higher level analyses (for example, biostratigraphic correlations, studies of biological diversity and extinction through time, and hypotheses as to the nature of fundamental evolutionary processes).

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