

De Wit's ON COMPETITION reprinted

Evolutionary Monographs has reprinted C.T. de Wit's classic small book ON COMPETITION, which is absent from most non-agricultural libraries. This is volume 7. Firbank and Watkinson (1985, *Journal of Applied Ecology* 22: 503-517) give a recent entry into the development of the approach, which has been used in ecology and genetics since 1960 by those who knew about it. The price for individuals is \$8.00 and for institutions is \$10.00.

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**Miocene—Pleistocene planktic foraminifers from D.S.D.P. Sites 208 and 77,
and phylogeny and classification of Cenozoic species**

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This is volume 6, with 200 pages plus 25 plates. Published 1986. The price for individuals is \$24.00 and for institutions is \$28.00.

ABSTRACT

Rich assemblages of tropical and subtropical planktic foraminifers from two coarsely sampled upper-Cenozoic deep-sea sequences suggest the need for changes in taxonomic method with a corresponding reclassification which includes all Cenozoic species. This is necessitated by the observation that representative collections of assemblages from phylogenetic lineages exhibit unexpectedly high degrees of variation in test morphology both within assemblages and through sequences of assemblages, and so much more inclusive concepts of many species are required. Also, speciation events in many of these species lineages appear to have been preserved by the appearance of discontinuities in variation within sequences of assemblages. These observations combined with the extensive literature which documents stratigraphic distribution of infraspecific taxa are used to revise the phylogeny of late-Cenozoic species with regard to the branching sequence. This method of phylogeny reconstruction has been termed stratophenetic analysis by P.D. Gingerich. Because the common ancestry of most of these clades appears to lie in the early Cenozoic, the branching sequence is extended to the beginning of the Cenozoic based on the work of W.H. Blow. Two complementary suprageneric classifications of Cenozoic species are offered, each based on this cladogram. Both schemes refer to a revised set of generic and species taxa. The fossil species is defined cladistically: a lineage of populations existing from the splitting event of its immediate ancestor until splitting into its descendants or until terminal extinction. Degree of anagenesis associated with cladogenesis or occurring between cladogenetic events is ignored in species definition. This taxonomy results in 138 nominal Cenozoic species (four new), one for each internodal segment of the cladogram. The genus is defined phylogenetically but is neither cladistic nor, as normally applied, phyletic. For primarily practical purposes the genus is used to combine species which form an ancestor--descendant series and so tends to distinguish between sets of evolutionarily conservative and specialized species. The extent of these series is determined by relative times of availability of genus-group names. The method results in fifty nominal Cenozoic genera (eight new). The two suprageneric classifications proposed are phylogenetic. One employs the traditional categories recognized by the International Nomenclatural Codes and emphasizes monophyletic groups of species with broadly similar degrees of diversification while adhering as closely as practicable to established suprageneric concepts. This classification consists of two families, six subfamilies, and twelve tribes (four

new). The other classification is strictly cladistic and is expressed by a new nomenclature of seventy-three 'cladegroups'. The two classifications can be broadly compared as follows:

cladophylistic

Globerigerinacea
 Heterohelicidae
 Guembelitrinae
 Heterohelicinae
 Globigerinidae
 Globigerininae
 Candeininae
 Truncorotaloidinae
 Globorotaliinae

cladistic

Globigerinivicesimaeseptimae
 Heterohelicidecimae
 Guembelitriquinatae
 Heterohelicionae
 Globigerinivicesimae
 Globigerinivicesimae (part)
 Candeinidecimae
 Turborotalisextae
 Globorotalinonae.

In order to overcome the practical problem of documentation of anagenetic change and population variation useful to stratigraphic and ecologic application within the more inclusive nominal species defined herein, the 'phenon' is used to represent morphologically defined infraspecific taxa. Of these, fifty-three are introduced as new subspecies and two new names are erected.