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Phylogeny of Araneae: the fossil evidence and its interpretation

A phylogenetic tree combining all known fossil spider records with cladograms of Recent spider families is presented. This diagram reveals a number of interesting features. First, we rely heavily on Fossil-Lagerstätten (exceptional occurrences of well-preserved fossil fauna) for the fossil record of spiders; by their fragile nature, spider fossils define the occurrence of a Lagerstätte. Second, the vast bulk of fossil spiders occur in Cenozoic strata, because of their common occurrence in amber of that age (mainly Baltic and Dominican Republic). Most modern spider families, and a few fossil ones, occur in Cenozoic strata (i.e. less than 65 Ma in age). Third, there are very few Mesozoic and Palaeozoic spiders, known mainly from single specimens or a few from a single locality, but they tell us a great deal about the evolutionary history of the Araneae. Most Mesozoic spiders belong in modern families, and a picture is emerging of great longevity of many spider families. Fourth, it is rational to concentrate on Mesozoic spiders in order to fill out our knowledge of the geological history of Araneae and, fortunately, many new specimens are coming to light from strata of this hitherto dark age in the history of spider evolution.