

## PHYLOGENY OF THE "POST-TRIASSIC" NAUTILOIDS

Engeser, Theo

Institut für Paläontologie, FU Berlin, Malteserstr.74-100, D-12249 Berlin, Germany

engeser@zedat.fu-berlin.de

The „Post-Triassic“ nautiloids (mostly systematized as suborder Nautilina) form a well-known systematic unit within the Nautiloidea which ranges from the beginning of the Jurassic to Recent. Triassic representatives of *Cenoceras* lack the characters outlined below and are therefore excluded from the suborder Nautilina. However, the monophyly of suborder Nautilina has still to be demonstrated. Within a phylogenetic analysis that uses data from about half of the described genera two subunits of the „Post-Triassic“ nautiloids are recognizable which can be demonstrated to be monophyletic; the family or superfamily Nautilidae/oidea Rafinesque-Schmalz, 1815 (incl. Cenoceratidae, Cymatoceratidae pars (?), Heminutilidae, Paracenoceratidae, Pseudaganididae, Pseudonautilidae) and the Aturiidae/oidea Chapman, 1857 (incl. Eutrephoceratidae, Hercoglossidae).

The family/superfamily Nautilidae/oidea is characterized by comparatively large embryonic conchs (minimum 1.5 cm in diameter in small species), 5 septa, and slightly curved embryonic conch which usually leaves a large „umbilical“ gap.

The family/superfamily Aturiidae/Aturioidea has small embryonic conchs (max. 1.0 cm in diameter), tightly coiled embryonic conchs leaving only a very small „umbilical“ gap.

A character that is unique within these two groups compared with other „Pre-Jurassic“ nautiloids and that is shared only by these two units has not yet be found. It might be that these two lineages independently crossed the Triassic/Jurassic.

Plesiomorphic characters that are presumably present in both groups are: an extremely yolk-rich development compared with the Neocephalopoda (Sphaerorthocerida, Bactritida, Ammonoidea, Coleoidea), a radula with 13 elements (known since Carboniferous), calcified beaks (since Triassic, probably Permian), „many“ arms, funnel with two folds, pin hole eye, 4 gills a.o., to mention just the more important features.

Within the family/superfamily Aturiidae/Aturioidea we have again two lineages, the family/subfamily Eutrephoceratidae/inae with almost straight sutures, and the Aturiidae/Aturiinae with a tendency to increase the folding of the sutures.

The units within the (super-)family Nautilidae/oidea can be characterized by conch form and moderate ornamentation. The Recent genera *Nautilus* and *Allonautilus* form an independent off-shoot that is easily characterized by several unique features (e.g. 7 septa at hatching, „protoseptum“)

The ancestor of the Nautilina (or ancestors, if not monophyletic) may has/have derived from a Triassic nautiloid group with smooth conchs such as the Syringonautilidae.

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Autor(en)/Author(s): Engeser Theodor

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