

THE EVOLUTIONARY-PHYLOGENETIC PATHWAY OF *AEGOCRIOCERAS* SPP. – REVISITING A CRETACEOUS AMMONOID

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The Cretaceous ammonite genus *Aegocrioceras* from the Boreal of northern Europe is an enigmatic ammonite taxon. Both, the systematic validity of its species as well as the origin of the genus are still a matter of debate. Here, we use an assemblage consisting of *Aegocrioceras* species from the clay pit Resse (NW Germany) to evaluate the genus' systematics, origins, and evolution. A total of 320 specimens have been analysed for their conch morphology using univariate measurements, and their ontogenetic growth trajectories have been predicted, to evaluate the genus' phylogenetic relationship. We observe a clear systematic distinction of *A. raricostatum*, *A. spathi*, and the *A. bicarinatum/semicinatum/quadratum* complex. A phenetic analysis puts all *Aegocrioceras*-species firmly within one clade, suggesting their monophyletic origin. The *Aegocrioceras bicarinatum/semicinatum* complex would be the phylogenetically oldest, with *A. spathi* being the youngest species and potentially a sister taxon to the boreal *Crioceratites seeleyi*. This is supported by the stratigraphic range observed in the Speeton clay (UK) as well as in the clay pit Resse. A derivation of *Aegocrioceras* from both the Boreal *Juddiceras* and the Tethyan *Crioceratites* leads to nearly identical phylogenies, coherent with the observed stratigraphic distribution of the species, so that a decision for either one of the derivation hypotheses cannot be made based on our data. We hypothesize, though, that at least some of the later (i.e. Hauterivian) *Crioceratites* in the Boreal may indeed be descendants of local *Aegocrioceras*-species, instead of newly invading Tethyan forms. *Aegocrioceras* seems to have been competitive against incumbent Boreal ammonoids mainly through abiotic forcing (Court Jester processes), while evolution within the *Aegocrioceras* clade seems to be dominated by biotic competition processes (Red Queen model).