

THE PHYLOGENY OF THE EARLY PALAEOCENE ORDER TAENIODONTA USING NEW SPECIMENS FROM NEW MEXICO, USA

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After the Cretaceous-Palaeogene (K-Pg) mass extinction mammals thrived in the Cenozoic. However, the phylogenetic affinities of early Palaeogene 'archaic' mammals that lived immediately after the extinction remain unresolved. Taeniodonta is a group of puzzling 'archaic' mammals that appeared in the early Palaeocene of North America. They are arranged into two subgroups; the Conoryctidae and Stylinodontidae and are characterised by their extreme degree of dental wear, indicating an abrasive diet, which led to hypsodonty in the most derived species. Due, in part, to their worn teeth and their rarity in the fossil record, the position of taeniodonts in the mammalian phylogenetic tree remains unresolved. New fossils from San Juan basin, New Mexico, USA, including unworn teeth of four genera and postcranial elements of an early taeniodont, *Conoryctes*, shed light on their dental and postcranial anatomy. Both in the forelimb and hind limb of *Conoryctes*, there are anatomical adaptations towards fossoriality. Using these specimens, we scored taeniodonts and other Palaeogene mammals into a phylogenetic data matrix (620 characters, 135 taxa). We then conducted a phylogenetic analysis using parsimony. Our results show that Taeniodonta is a monophyletic group within Eutheria. We also found that *Onychodectes* is basal to the two subgroups previously proposed. Based on the new postcranial fossils and revised phylogeny, we concluded that digging behaviours were likely ancestral for taeniodonts. Therefore, a more fossorial mode of life may have been beneficial for their surviving and thriving in the wake of the K-Pg extinction.