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## The use of Platypus Teeth in Mammal Phylogeny

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Mammal evolutionary relationships are commonly reconstructed using tooth characteristics because of a bias towards tooth and jaw preservation in the fossil record. Monotreme relationships have been reconstructed in the same way despite the fact that both the extant adult platypus and echidna bear no true teeth and general mammalian tooth terminology is commonly misapplied. This is a summary of previous work and a closer look at cusp variation in the molars of the extant juvenile Platypus *Ornithorhynchus anatinus*. To assess homology, developmental patterns, and variation, I created a visual key using a comprehensive collection of previously figured juvenile teeth as well as new CT data from two previously unpublished sets of dentition including a skull with dentition AMNH 252512, and loose teeth from University of NSW. Furthermore, I used monotreme fossils and published imagery to clarify homology between the reduced cusps of the extant juvenile platypus and the fossil forms. The results of this analysis designate the role of juvenile platypus molars in phylogenetic analysis by justifying the limit of cusp homology application. These platypus teeth characters enrich, clarify, and correct previously scored characters in analysis of mammal relationships.

**Keywords:** *Ornithorhynchus anatinus*, phylogenetic analysis, character scoring, monotremes, teeth