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# Stagodontid marsupials from the Late Cretaceous of Canada and their systematic and functional implications

Richard C. Fox and Bruce G. Naylor
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Previously undescribed specimens of stagodontid marsupials from Late Cretaceous deposits in Alberta, Canada, reveal new information concerning the upper dentition of *Eodelphis* spp. and the lower dentition of *Didelphodon coyi*. Additionally, an incomplete upper dentition of *D. coyi* from the Scollard Formation extends the range of this species into the Lancian, co-eval with *D. vorax* and *D. padanicus*. Stagodontids are in accord with other North American Late Cretaceous marsupials for which the appropriate parts are known in lacking diastemata between the canines and the molars while possessing well-developed palatal vacuities, implying that these morphologies characterized ancestral marsupials. If so, the diastema between P1 and P2 in the Asian middle Early Cretaceous 'metatherian' *Sinodelphys szalayi* is convergent on that in Cenozoic didelphids, and the absence of palatal vacuities in South American Paleogene and Neogene borhyaenids is derived, representing a paedomorphic truncation of development. Claims that the Asian Late Cretaceous 'metatherian' *Deltatheridium pretrituberculare* had a marsupial-like dental replacement pattern are tautological, deduced from an a priori acceptance of a marsupial model of replacement to the exclusion of other, no less realistic, alternatives. The new specimens of *Didelphodon coyi* demonstrate that upper and lower premolars occluded broadly, implying that the inflated lingual lobes characteristic of *Didelphodon* premolars evolved primarily as a crushing mechanism, not for passive protection of the gums. Recent speculations that stagodontids were aquatic are not based on credible morphologic or taphonomic evidence and are dismissed, as is speculation that the Judithian species of *Eodelphis* are sexual morphs of a single species. Current knowledge of *Didelphodon* compels correction of numerous errors concerning its morphology as presented in recent analyses of marsupial relationships.

**Key words:** Mammalia, Marsupialia, Stagodontidae, Cretaceous, Alberta, Canada.

Richard C. Fox richard.fox@ualberta.ca, Laboratory for Vertebrate Paleontology, Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada T6G 2E9 (corresponding author); Bruce G. Naylor bruce.naylor@gov.ab.ca, Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta, Canada T5J 0Y0.


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