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Structure of the K-T mammal radiation in North America: Speculations on turnover rates and trophic structure

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Preliminary results from Montana and New Mexico (USA) indicate that appearance rates for mammal species increase from the latest Cretaceous (Lancian) into the early Paleocene (Puercan) with a slight decline in to the middle Paleocene (Torrejonian). Disappearance rates decline over the same interval and equal appearance rates by the Torrejonian. These results are the opposite of those found by Van Valen (1978). Some groups (condylarthrans) have more frequent
speciation events and shorter species durations than suggested by Stanley (1979). The overall appearance rate for the K-T interval is very similar to that for the Paleocene-Eocene transition (both about 1 sp./10^4 yrs.). The overall disappearance rate for the K-T interval (1.4 sp./10^4 yrs.) is markedly higher than for the Paleocene-Eocene transition (0.5 sp./10^4 yrs.). With the extinction of dinosaurs, "guilds" of small mammals are re-established and new "guilds"
form after about 2.5X1O^4 years. Appearance rates are highest during guild establishment.

Key words: Mesozoic mammals, Cenozoic mammal radiation, Cretaceous-Tertiary boundary, turnover rates, trophic structure.

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