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Reading #13

Dinosaurs in decline tens of millions of years before their final extinction.

Authors: Sakamoto et al., 2015.

Summary: This paper investigates the declining speciation of dinosaurs some 20 My before the Chixculub bolide impact which has traditionally been interpreted as main mechanism responsible for the end-Cretaceous mass extinction (~65 My). Noting that patterns of speciation and extinction are mostly understudied in paleontology, the authors apply a Bayesian phylogenetic approach in order to model and understand dinosaur speciation throughout the Mesozoic. They predict three possible results: (1) a linear increase with time in the logarithm of the number of speciation events along each path of a tree would indicate that speciation and extinction rate were constant; (2) a curvilinear relationship would show that speciation rate did decrease over time but remained above extinction rate and (3) an asymptote that then curves down as extinction rate surpasses speciation. The authors use a phylogenetic generalized linear mixed model (GLMM) in a Bayesian framework and three dinosaur phylogenies and find that the third option where extinction rate exceeds speciation best fits their data.

What I liked:

What I disliked:

Diagrams: