

LINEAGE SORTING AND DISPERSAL AMONG CRETACEOUS DINOSAURS

SERENO, Paul C., Dept. of Organismal Biology and Anatomy, University of Chicago, 1027 E. 57th St., Chicago IL 60637, U.S.A.

The breakup and drifting of major land surfaces in the latter half of the Mesozoic created significant geographic barriers for dinosaurs, the large-bodied, strictly terrestrial clade that had achieved a global distribution earlier in the era. Previous hypotheses of dinosaur distribution in the Cretaceous consist of dispersal or vicariant scenarios and qualitative or quantitative pairwise phenetic comparisons, the underlying assumptions of which are difficult to justify.

The timing and pattern of plate movements are now established accurately enough to outline a time course for separation of major land areas. Likewise, minimum divergence times for the principal clades of dinosaurs can be established from biostratigraphic data and phylogenetic patterns. The paucity of adequate skeletal remains from southern continents remains a limiting factor.

These data suggest that dinosaurian distribution in the Cretaceous was molded by newly formed oceanic barriers only late in the period, when characteristic faunas emerged on isolated continental areas by lineage sorting. Dispersal also played a role, the best documented case of which is the high-latitude sweepstakes route across Beringia.