

TRANSGRESSIONS, REGRESSIONS AND THE EVOLUTION OF DINOSAURS

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Although evident that the geological column must contain multitudes of transitional taxa together with the records of the potential processes which triggered the transformations, records of such taxa and patterns are extremely scarce in either terrestrial or marine environments. In western Montana a terrestrial unit of Upper Cretaceous (Campanian) strata, deposited during a regressional, transgression episode, record not only what are interpreted to be transitional phenomena, but also divergent processes which yield bimodal patterns of evolution. A variety of dinosaur lineages, represented by numerous individuals, were collected from dated stratigraphic intervals at numerous locations along the regressive, transgressive strand of the Two Medicine Formation. Data suggest that environmentally stressful, transgressive periods produce non-cladogenetic (?anagenetic), transformative phenomena, and regressions (environmental stress release episodes) produce diversification and cladogenetic phenomena. Sexual selection appears to coincide with transgressive pulses and adaptational selection with regressive pulses. Deficiencies to recognize similar patterns and processes elsewhere is thought to be the result of inadequacies in both Linnean and cladistic approaches to classification and phylogenetic systematics.